

The EARL *of* HELL

JOSEPH GRAY KITCHELL

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BY
JOSEPH GRAY KITCHELL



THE CENTURY CO.
NEW YORK & LONDON

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Printed in U. S. A.

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CHAPTER I

PAUL AMES JUNIOR opened his eyes to earthly surroundings at the same moment that those of his mother were forever closing upon them. He was of vigorous New England stock, well seasoned stock, for his forefathers had settled at Guilford, Connecticut, many generations earlier, with a notable little group from Chester, England.

Under the care of a maiden aunt the child grew strong and early evinced not only a vigor of body but a force of mind that did credit to his parents' ancestry, their good habits, thrift and righteous thinking.

Although a man of considerable means, Paul's father was a staunch believer in the democracy of the public school and therein the youngster was started at the plastic age of five years. At eleven he had entered high school where he developed surprising traits of general

resourcefulness and a never-satisfied hunger for research, investigation, analysis. These traits found expression also during the early periods, in the perpetration of many pranks and boyish escapades, at no time vicious but unusually startling and novel.

His development was marked by a passion for the great out-of-doors. To this his father allowed full rein, taking the boy on long excursions into the country, and giving him the instruction which he craved concerning metals and rocks. Although the exacting demands of his work permitted Paul's father, who was an engineer of international reputation, to spend less than an average of three days out of thirty with his son, almost all of the privileged period was spent in close companionship in the open, a series of glorious holidays from the time that Paul was six years of age until he was twenty-one.

Following the boy's natural bent, the father arranged for Paul's curriculum in college to be directed in preparation for mining pursuits and the student was soon fascinated and engrossed with courses in mineralogy, metallurgy and geology, taking as related supplements some special work in radium interpretation, its atomic

structure and the revelations of the ultra-violet and infra-red rays.

Paul was a clean-cut, clean thinking athletic young man with a pleasing personality; somewhat serious as to expression, an expression that became winsome when he smiled.

Six wonderful summer vacations had been spent with his father when he made important expeditions into the mountains of our western states and of Canada; and they were halcyon days never to be forgotten for the comradeship of the two was exceedingly close and mutually helpful. Under such practical tutelage Paul became a skilful reader of the language of rocks and strata, learned to scan the hard face of hill or mountainside and read its character almost at a glance.

This almost ideal companionship of father and son was terminated while Paul was a senior at Yale and an alternate on one of the crews.

Returning from the gymnasium to his chambers in Vanderbilt Hall in the late twilight of an April day he was delighted to find his father writing at the desk by the window, but not surprised, for unannounced arrivals were the usual order of things. Few letters passed between them while the engineer was away and

when he returned he invariably reported to his son's apartment, for the Ames residence was closed when Paul entered college.

"I'm glad to get here to you, Paulus, *so* glad, *so* thankful, my boy. I've had pneumonia down in Hermosillo and I don't seem smart enough to rebound. You know what pneumonia means in Mexico, but I am lucky to get here—been here only an hour."

The great engineer sank a little lower in his chair. He seemed weak and ill, but his smile was serene.

"I understand," said Paul in the cheeriest voice he could assume. "But now to bed and a fine rest for the best Dad in the world, and tomorrow we will make new plans."

But the morrow's plans were made by Paul alone for in the morning his father was found dead in his bed.

After Ames's graduation and the settlement of his father's estate, to which he was sole heir, he spent two profitable years in foreign travel and attendance at lectures by scientific authorities in various universities.

Returning to New Haven, he reëntered Yale and commenced a two years' post-graduate course, locating again in Vanderbilt Hall.

That period, between his twenty-fourth and twenty-sixth years, was the most progressive of his entire student career; and went far to advance him in the field of invention and scientific research.

Three helpful improvements in laboratory apparatus were credited to him by the university, one of them a device registering the relative heat units of each hue division of the spectrum, but the most important was the invention of a method of transmitting pictures over a telegraph wire.

They were happy days, too, for Paul valued college relationships more highly, perhaps, than the run of youngsters and, without striving for popularity, was generally liked and reasonably free from self-esteem. He allowed himself few intimates, or, perhaps, it might better be said that they were not allowed him.

"Paul's a good enough mixer," said a classmate, "but not *of* the mixture."

This thought, differently expressed, was "He's too individual."

But a staunch intimacy had been established with Dr. Worthington's family, the doctor being Ames's instructor in metallurgy and a man of rare qualities. Years before he had

been a student with Mme. Curie when pursuing the investigations made by Professor Becquerel. To Dr. Worthington was allotted credit for several important discoveries concerning radio activity.

At the modest home of Dr. Worthington, Ames had taken part in many experiments that in subsequent years became the bases of newer expositions.

These meetings for scientific research might have been less frequent, had the element of social communion been absent,—or had Sarah, the daughter of the doctor, been less attractive.

Paul admired her, for she was well-bred, candid, intelligent, vivacious without “dash,” reserved but warmly cordial,—and, best of all, was possessed of a compelling charm that was beyond analysis.

Many were the drives she had taken in Paul’s roadster.

If she and Ames went alone they were happy and if the Worthington parents joined them, they were happier still.

But other cars carried Sarah also, notably the swift, gray Benz, ably controlled by the strong hand of Eric Herancourt.

Herancourt was good at controlling and was,

indeed, a masterful personality. But despite the will to dominate, his associates heartily liked Herancourt, big, handsome, hot headed, generous, several years Paul's senior. He was a native of Hunovia.

Unmistakably Hunovian in appearance and temperament, he prided himself upon the possession of such foreign traits as Americans approve, and made a point of denouncing those which are frowned upon in the United States.

His purpose was to qualify for American citizenship; he had filed his first official declaration at his earliest legal opportunity and under all circumstances evinced a determination to absorb to the point of saturation any and all things American.

After five years at Cambridge he had been sent to New York to represent the important industrial company presided over by his father, a concern that dealt largely in coal tar products and the extraction of rare minerals such as iridium and radium.

His position was largely a sinecure, plentifully remunerative and although he had taken honorary degrees at Heidelberg and Vienna, he had since 1919 spent five days of each week taking special courses at Yale, devoting only to

business demands such time as he felt would not interfere with his university studies. But in fairness it should be said those duties were more representative than administrative; the real work of the office being accomplished by a corps of experienced and older men whose positions were contingent upon satisfactory results.

Eric having come to New Haven with excellent letters from New York and Washington, with a pleasing personality and adequate spending money, found little difficulty in gaining admission to society.

Herancourt was an all-round good fellow, the kind of man that men liked to be with and quite representative of the type generally designated as a "good sport." And as a sport he played equally good golf, polo or poker, was inclined, perhaps, to press an advantage when winning but lost cheerfully and with unabated hope. It had been rumored that while at Heidelberg he had qualified as a good bet in the beer consuming contests and that he still kept up the habit of his earlier student days.

During his first year at Yale he quite cheerily deflected a rebuke by one of his professors who sniffed judicially and snapped at him, "Drink anything?"

"Anything at all!" Herancourt made haste to assure him, with ingenuous cheer not unmixed with hope.

Although dissimilar in many ways, a strong friendship had sprung up between him and Paul, a friendship that survived the stress of rivalry in both play and work. Both were advanced students in the same field of scientific accomplishment. Whenever it became known that the two men were to be pitted against each other, whether on campus or in class events, the occasion was sure to be marked by an enthusiastic gallery.

One late afternoon Ames, Herancourt and a group of summer students were crossing from the Taft Hotel to Vanderbilt Hall.

"Say, Herancourt, you have a dratted heavy technique when you run that typewriter of yours. Heavy concussions, very heavy concussions, with accent upon the cuss." This from Mart Hopkins.

Herancourt was genuinely surprised. "Can you hear me?" he innocently asked.

"Hear you, you pterodactyl pup? Those thunderous thuds of yours come crashing through the ceiling and fracture my rest."

"That's odd," Herancourt replied. "Ames

uses a typewriter right over my room. I don't hear a sound."

"What's the answer, Ames?"

Ames smiled and confessed, "Silencer."

"What d'you mean, silencer? Maxim?"

"No, O'Mulligan's. Want to come up and see?"

"Sure thing," admitted Herancourt, "and if it is n't too expensive, I'll buy one—and send the bill to Hopkins."

Herancourt entered Paul's room. The new typewriter, mounted for action, was placed on a small, low table each of whose four feet occupied one of Paul's shoes, fitted with heavy rubber heels.

The sight impressed Herancourt.

"So-o-o-, that's the shock absorber. I say, you are very thoughtful, very considerate."

Paul opened the humidor and motioned toward an easy chair, "Light up, Herancourt, I'd like to talk with you a minute."

There was a pause, then Paul, looking over Herancourt's elevated feet and out of the window almost to Long Island, said in brisk tones, "Fine girl, Sarah Worthington."

"You said it," Herancourt agreed without reserve.

Then another pause devoted to smoke volleys.

"You made a great approach for the seventeenth green," ventured Ames, manoeuvring for a flank attack.

"Thanks, liked it myself," replied Herancourt, searching Paul's face to head off a surprise. That it related to the girl both were interested in, he was certain.

Paul put down his pipe and looked his friend in the eye.

"Herancourt, if you want me to keep off the grass, put up your sign. I've got to make my place in the world before I think much about marrying. It's a tender matter for two dubs to tackle like this, but I believe Sarah cares for you and I am certain that I do. I want to play fair, you know, old man, so if you and she are getting anywhere near to an understanding, where—where—I am a disturber, why, say the word and I will watch my step."

Herancourt rose before Paul had finished and the impulsive hand that was thrust toward him was unsteady. "Ames, how I love my friend for this! You make me very happy, you make me feel like one of you. Now I tell you this, my dear Ames, I too have a place to make before I have the right to ask any girl that she

marry me. I shall marry only an American and I shall myself be an American citizen when I do marry."

Ames retained the grasp of his comrade's hand and Herancourt continued. "Two uncles of mine came here to the United States and both married American women. One of my uncles is the owner of a great newspaper here. I am already American—here in my heart—although I love my father's country."

A space of silence followed. Herancourt broke it. "Yes," he said as though thinking aloud, "America is now my home, she is Hunovia's friend and so my father is willing. I like to please him."

Paul refilled his pipe, and then in genuine warmth of sympathetic fellowship he assured Herancourt that he and all the others were glad indeed that such was his decision. "And we hope, Eric, that——"

But Herancourt was not attentive nor had he finished what he wished to say. Hands in trouser pockets, elbows wing and wing, he strode heavily back and forth, silhouetted against the windows a-glimmer with twilight. "Ames," he interrupted, "it was a long time before I was clear in my mind about it. I was

much in England and I admire the British institutions and the people, but my father does n't and he sent me here. That was good. He is a true Hunovian patriot and a hard hater. Any country that is good to Hunovia is a good country in his eyes, and mine, too. But until I am one hundred per cent. American I feel I am looked upon as a foreigner and many times I have felt that the Worthingtons only tolerated me in their great kindness. They were very, very kind to me, Sarah in particular—she is the finest girl in the world but——”

He halted his heavy marching, faced Ames and in earnest tones continued, “No, Ames, no understanding exists between Sarah and me—the field is open to you as well as to me. It is a big satisfaction when I let myself think that I have even a fighting chance when the right time comes. But Ames,” and here his tone took on just a shade of challenge, “when the right time arrives and Lady Sarah has a rose for some knight, then—well *then* I am going after that rose!”

CHAPTER II

THE insistent demands for radium during the summer sounded the call of opportunity to Ames and Herancourt and both responded early in October, pooling their respective specialties in a sort of partnership arrangement.

Colorado was to be the field of investigation, pursuant to Herancourt's theory that a certain prospecting route he had laid out was rich in promises of pitchblende deposits, while Ames's share was a new method of ore reduction—as yet only a laboratory demonstration but one he felt sure would prove practicable in quantity treatment.

The excellent Dr. Worthington suggested to Sarah the high propriety of summoning the clan for a send-off. And it was done.

A jolly party. Sarah sang some of the old favorites, particularly two of Nevin's that her father and Paul loved, her accompaniments played by Gustav Casaraghi, otherwise known as "the little dotted Swiss"—possibly because

he was much befreckled and hailed from Geneva; Herancourt rendered two Brahms numbers on the 'cello and rendered them well. The affair was far from formal and a dozen or more of the selections were rollicking choruses.

Naturally enough the prime topic of discussion was the mystery metal, radium.

"What was the metal worth an ounce when you were in Europe, Dr. Worthington?" asked Casaraghi.

"An ounce!" exclaimed the doctor, "Let's fix on a lower unit, the milligram, for instance. I believe when the substance was new a few sales of the radium bromide were made at about two dollars a milligram; then in nineteen hundred and twelve and nineteen hundred and thirteen it was in great demand at seventy dollars the milligram. The World War increased that demand so that now I apprehend it is about a hundred dollars a milligram and going up."

"A milligram!" exclaimed Sarah, "and it takes one thousand milligrams to make an ounce, does n't it, Daddy?"

Her father coughed apologetically and his smile petitioned indulgence from the others.

"It takes a thousand milligrams to make a *gram* and sixty-five *grams* to make an ounce,"

the doctor recited, with school-room familiarity.

Ames had been figuring. "It looks as if an ounce would cost about six million five hundred thousand dollars, Eric, but we'd better book retail orders first. Step up, kind friends, a hunk of radium the size of a grain of wheat for six thousand five hundred dollars."

"Not enough to show for the money," Casaraghi retorted. "I would rather flash a big white diamond."

"Remarkable thing," the doctor mused, "but you can get a much better show, or let's say manifestation, with a morsel of radium than with any other matter known to man." Taking Ames's pencil, he also did a little figuring.

"Radium has an inextinguishable *personality*, its presence is recognizable even when infinitely divided," he announced. "Say there are one thousand million humans on the earth, you could take just one third of your grain of radium and give to each human a recognizable quantity—that is, each infinitesimal atom would give forth unmistakable evidence of its active existence."

"Judas Priest!" exclaimed the Swiss, "in what possible manner, doctor?"

"By energetic action, visible activity, revealed by one of the simplest recording devices—the gold leaf electroscope," Dr. Worthington answered.

"My dear," here his wife quietly put in, "I'm afraid you are bringing the laboratory into the dining-room."

At a favorable opportunity Sarah took Paul and Eric each by an arm and led them to an arbor outdoors where great clusters of cool Concord grapes glistened in the light from the music-room windows.

"It hardly seems fair for both of my playfellows to forsake me," she said in repressed tones. "It's a long way off—Colorado."

"Back here in May," said Paul. "You see, Sarah, this is to be a sort of working holiday. Herancourt is on the trail of a great mass of radium about the size of a collar button and I am going to revolutionize the process of reduction. I admit it under pressure of cross examination!"

"And as to our both going," he resumed, "the jobs aren't so big that either Eric or I could not do them alone, but the trouble is neither of us would trust the other to remain here, so——"

"And so it was we agreed we both go," Herancourt contributed, and both joined in a somewhat forced laugh.

"How very flat, you foolish boys," Sarah chided, "but I shall surely miss you dreadfully and shall be very glad when you return staggering under the weight of radium. What I brought you out here for was to let you drink the 'stirrup cup.' I remember reading that in the old days when the cavaliers were mounted upon their steeds, their feet in the stirrups, ready to start, the host or hostess followed them out bringing a cup of wine to be drunk at parting. We have no wine but here are the sweet 'makin's.' "

Then she picked three glorious purple clusters, handing two to the knights, and with somewhat forced playfulness remarked, "Now it's a party."

"Crusaders setting forth in quest of the radium Grail," mumbled Eric, between grapes.

"Hush, that's sacrilegious," Sarah rebuked. Then in another moment she asked, "Radium is almost a miracle, is n't it?"

After a slight pause, Paul answered with earnestness, "My father wrote a few—impressions—just before he made his final pilgrimage

and I often refer to them. One of them was, in effect, that a miracle is commonly believed to be a contravention of fixed laws, but he believed there never had been a miracle in that sense, and never *could* be one, that the laws of truth could permit no exception. 'Miracle' to him meant 'marvel'—something wondrous and extraordinary because unfamiliar; and that all phenomena were explainable, all effect being the result of lawful cause. Huxley said miracles were demonstrations of hitherto unsuspected laws."

"Miracles then are simply happenings that seem contrary to natural laws, but are in conformity to unvarying laws yet to be learned?" asked Sarah.

"Yes, happenings, or beliefs of happenings," ventured Paul.

"I cannot express it as some of you would, but are n't most faiths just beliefs, ultimately glorified?" asked Sarah.

The question was directed to Paul more than to Eric, but before Paul attempted to answer, his impulsive colleague asked,

"Do you ever read Goethe? What you say reminds me of this from his 'Elective Affinities.' It is not so expressive out of the original,

but I memorized it in English years ago when I was in Cambridge.

'Who wine desires the luscious grape must press
'Who miracles would see must faith possess.'"

"Delightfully apropos," applauded Sarah, "and so the class deduces that no wonderful achievement follows without faith. I now propose your safe journey, speedy return and success; and as it is pretty damp here, I further propose we all finish our new wine, wipe our sticky hands and go indoors."

But, though the evening party was the formal farewell, it was not necessarily the final social incident in the drama of departure. The next day Eric's gray Benz stopped in passing, and Sarah became a passenger for the ride through the valley of Naugatuck. Red-cheeked winesap apples were brought home from a farm near Danbury.

But the day following another car, a low-hung black Stutz, with nose close to the ground, followed the cold trail of the Benz to the very horse-block of the Worthington home, and throbbed nervously until Sarah appeared. Then over the hills and far away, through Banford and Guilford, to Saybrook and Lyme.

During those two farewell rides each of the men was keenly alive to the charm of Sarah, and each consoled himself with the thought that he was coming back in six or seven months. But one of them was delayed.

As for Sarah, she had bestowed the "stirrup cup" upon her two knights with apparent impartiality, but a tiny romantic corner of her heart held always a memory and a certain challenge when she reviewed their farewells.

Paul had clasped her hand warmly and his blue eyes had searched the depths of her own perhaps questioningly, for a brief moment only. But Eric, with an unconscious reversion to his earlier training, had lifted her hand to his lips, and his eyes had sought and held her half-startled gaze for even more than a brief moment.

CHAPTER III

AFTER their arrival in Colorado, Paul and Eric devoted two busy and profitable months to prospecting in the vicinity of the Grand Canyon, all that was possible before heavy snow drifts interfered with some of the outdoor operations.

There were bright-hued holidays mixed in the gray pattern of hard work—excursions to prevent them from becoming dull. Only those who have thrashed the cold and tumbling mountain streams for trout and grayling; who have blazed away with both barrels straight overhead into the evening mists in chance shots at migratory wild geese; only those who have carefully, deliberately elevated the globe or the peep-sight for a thousand yard pop at a high perched mountain goat; or on the third or fourth visit to the bear trap have found a silvertip sullenly mouthing the chain—only such can know the exhilaration, the appetite, the fatigue and the full-sated rest that such expeditions assure.

On those holiday trips the very important issue of "small bore" versus "heavy caliber" rifle was forever settled by and for their respective owners. Eric conclusively proved to his complete satisfaction that the .303 Lebel with 40 grains of DuPont smokeless was the best; while Paul became more than ever thoroughly convinced that the old 1880 model Winchester 45-90 formerly used by his father was invincible.

The prospecting efforts by Eric had led to most promising fields and the laboratory work by Paul had resulted in successful developments along the line of new treatments of carnotite concentrates, but up to April, when the base was changed from the Grand Canyon to the new territory further northwest, the labors had been more experimental than conclusive.

One rainy Monday Paul received a letter from Dr. Worthington which he read aloud to Herancourt. The most significant paragraph of that letter was: "I am inclined to believe that your theory about the equatorial belt as a promising field for prospecting is well worth trying out, but it would mean quite a jaunt and greatly prolong your absence. Sarah puts upon me the task of reminding you both of your de-

clared return date and to announce that the maximum of extension will be thirty days, with the imposition of severe penalty for non-observance."

"Some day I'm going to develop that equatorial notion and I wish you would go with me, Herancourt."

"When would you go?" the other asked.

"I have no set plan yet," answered Ames, "but the sooner the better!"

It happened that less than a month afterward a blocked out survey made it reasonable to assume that quite an extensive deposit of carnotite had been located and several months afterward a company was incorporated in Denver to develop the property.

In this corporation Ames and Herancourt were directors, together with several mining promoters representing local capital; and a reduction plant was soon after constructed to operate under the process methods developed by Ames during the months of laboratory and field work.

The first real achievement in the life of any man who has done things is usually recalled with greater gratification than many larger

ones that come later in life. Ames and Herancourt were greatly elated.

The call for radium by the medical specialists and physicists throughout the world was now tremendous; the armies of Europe were paying fabulous prices for minute quantities and it was a secret fact that subsequently became common knowledge that even Madame Curie, the discoverer of this metal of marvels, was not possessed of enough to continue her research program.

The new radium field became a matter of news interest in all countries, particularly in the press of the United States. Herancourt frankly rejoiced over each new clipping, for all contributed to the sum of good impressions he was depositing with his hopeful father.

Ames's new treatment resulted in an average increase of almost eleven per cent. in the reduction recoveries from composite ores, a method that involved the use of a magnetic wash in working the high concentrates.

Herancourt's work as general manager of the radium corporation clearly necessitated a prolonged residence in Denver. Ames's part in the organization, now that his method of

concentration was in operation, would be far from engrossing to one of his make-up and he was now ready for the new fields that speculative theory had opened to his inner gaze.

Though Herancourt had no enthusiasm to spend on Ames's project, yet he made no attempt to discourage its execution. He had been satisfied in a discussion of the subject soon after the formation of the Colorado company that Ames could be dissuaded from his purpose only with great difficulty.

"I say, pard," he asked on the way to a director's meeting, "wish you would satisfy me that you are altogether smart to fly off on that tangent to the infernal equator."

"It's asking too much to satisfy *you*, Eric, for I'm not at all satisfied myself and will not be until I've made the trip. If it proves that I've been foolish, well, we all know the remedy for flying off at a tangent. Return to the point of departure, is n't it?"

"Sure enough, but I hate to have you go so far away. We've stuck pretty close together for so long, you know. Where would you make your attack on the unsuspecting equator?"

"Ecuador," replied Ames, "it's nearest. Thirty-six hours to San Francisco, four days

to Panama, then a freighter to Guayaquil,—perhaps three or four days more.”

“Yes,” said Herancourt gloomily, “I have n’t much doubt about your getting there, it ’s getting back I ’m thinking about—and when.”

“That reminds me,” answered Ames, “I must get that power of attorney drawn up to-day—it will give you voting control until I return.”

After a while Eric resumed, “Your notion about the equator country as good prospecting is based on some centrifugal theory, is n’t it?”

“Notion?” Ames was half inclined to be sensitive. “Why—yes—I suppose it really is only a notion—I confess it ’s mighty nebulous. I was reading Professor Strutt, something he wrote before he was made Lord Raleigh. He had come to the conclusion that the interior of the globe must be composed of materials free from the presence of radium, and I remember that Professor Soddy of Oxford said in a lecture that it is expected the radioactive materials will be found confined to the crust and be absent from the metallic core.”

“Whirled outward from the center when the earth was cooling off, eh?”

“Yes, then and afterward,” answered Ames,

"and my theory is that as no profitable radium bearing ores have ever been found further north than the forty-fifth degree latitude, perhaps away down to zero, in the equatorial belt the field might well warrant a survey,—at least that 's what I am going to make."

"How much difference is there in the centrifugal whirl there and here?" questioned Herancourt, more courteous than curious.

"Not a vast amount," replied Paul, "perhaps twelve and a half per cent. You know, if the axis of a globe were a pin running through both poles, and we spun the globe, we would see that, while revolving, any spot along the middle line would travel a greater distance than any spot in the vicinity of either pivotal point or pole. At the equator every object revolves around the vertical axis of the earth with a velocity of about a thousand miles an hour, but here on the latitude of Denver, about eight hundred seventy-five miles an hour."

"Yes, that 's clear enough," Herancourt agreed, but now with real interest. "You would then aim to go as far away from the center of the earth as possible in order to get the benefit of the greatest centrifugal speed—not so?"

"Pretty well up in the Andes mountains, I suspect," Ames replied, "it's a long shot, just a fair chance that I might find something worth while, and I like the little adventure prospect too,—may be too old some day."

Herancourt was silent.

"Have to find another bunch of radium, old scout," said Paul with droll impressiveness. "You stay here in comfort while I depart for the waste places of the earth."

Herancourt clutched the arm of his companion with a caress, and with more emotion than he had ever shown before, the big fellow said huskily, "Paul, you dear old Yankee, I hate to have you go. I feel I ought to go with you—I care for you a lot, old fellow—do anything in the world for you. Let's have a bottle of wine."

Many times during the next few years Ames recalled the squeeze and the words, and the memory strengthened an obstinate faith, strained by the events that followed.

After the meeting, the bottle of wine, deferred in the opening at Ames's request, was absorbed during luncheon, and the power of attorney then duly attested and recorded.

Other preparations for Ames's departure

followed quickly during the next week, and on the day that the first random fleeces of winter's blanket dropped from Pike's Peak, Paul was ready for the Overland Limited to the Golden Gate.

After his baggage was packed, he wrote several letters and among them was one to Dr. Worthington. One also to Sarah.

The journey to San Francisco provided no over-entertaining happenings and on arrival there Ames found he would have a wait of six days, the sailing date of the *China* for Panama being delayed owing to boiler tube replacements.

Five days of this waiting period were spent in a rail trip to San Diego and a short visit to the radium mines in Paradox Valley.

At Panama Ames was fortunate in securing a room on the leisurely British tramp *Midvale*, hailing from Bristol, and three days later, in Guayaquil, he was learning to like the native cigarettes—those loosely rolled little pencils of ebony-colored tobacco in their jackets of dark and sweetened paper.

Guayaquil, to Paul, was a forlorn enough place, though much improved by the wonderful sanitation work of Dr. Michael E. Connor; and at the earliest hour possible, he left the sea-level

for the high plain of Quito. Here in the capital, three days afterward, he obtained fairly comfortable quarters at the Palacio Hotel and began to plan his expedition.

Dr. Baquerizo Moreno, to whom he had a letter of introduction from a rubber exporter he had met at the port, extended valuable help in various matters, including the loan of books and maps. Dr. Moreno was at the time a popular candidate for the presidency and, in fact, took office the next year, a man who stood out in high relief from the background of his Indian constituency.

The first of Paul's prospecting circuits had been definitely chosen in the middle slopes to the east of the giant Mount Chimborazo and the start was to be made in the early morning of November fifth.

On the preceding day, Ames was busily engaged in the patio of the hotel, checking over a quantity of canned foods when he heard his name spoken almost at his elbow; spoken in New Hampshire English that, so far from home, was most pleasant music to hear.

Ames's hand had begun to extend almost before he turned.

"Mr. Ames," said the visitor, "I'm powerful

glad to see you here, sir." And he looked it, the wide smile, the kindly eyes—it did not matter that the face was unshaven.

"My name's Thorp; Ephraim Thorp, Mr. Ames," he went on, still retaining Paul's hand in his own, a hand that would have impressed spoor in the earth like the foot of a brown bear. *"I knew your father!"*

The muscles of the other's hand that an instant before were politely flexed waiting release, at once galvanized into a grip that would have crushed less honest timber.

Knew his father! What a difference that made. The suspicion that had flashed upon Ames the instant after the meeting, the suspicion that here might be a predatory adventurer, at once dissolved.

"Eph Thorp!" Ames recalled at once. Many, many times had he read the paragraph on one of the sheets his father had written the day of his death, sheets which formed a monograph of guidance that he followed as a life chart.

The words were on the third page of that chart; he could visualize every stroke of the pen. "I make this clearer, Paulus, dear son, by quoting a twenty-two karat help that came to

me through Eph Thorp, a prospector and guide who was with me on that South American assignment, quite a remarkable character in some ways. This is about the way Thorp expressed it. 'The fellow who fears or expects the evil things is wishing them on himself. Clinch your prayer with expectancy. *Expect* what you want if it's good and don't be surprised when you get it.' "

And here was that man, Eph Thorp, and plenty of him at that, six feet two inches, raw-boned, bronzed, keen, gentle. Twenty years older than Ames perhaps. Usually taciturn but on occasion with a ready tongue.

"Mr. Thorp, I never was happier to see anybody in my life. How does it happen—live here?"

"No, not regularly," replied Eph, "I just got here this morning from Peru, had the fever four months. I need a job."

"You nailed a job the instant you said it," exclaimed Ames, "that is, if you will take it."

"I took it at the same instant, Mr. Ames," quietly observed Ephraim. "I am pretty certain we need each other."

"Fine! Now if you will help me check over this plunder and get it out of the sun we can

settle down for a get-together talk. I call this wonderful good fortune."

That night the two men sat up until after one o'clock and at breakfast the rancheros at the next table concluded from their absorbed conversation that the tall gringo had met with his long-lost younger brother.

It would have been hard for Ames to adequately express the happiness, the comforting assurance that the meeting with Thorp produced. The prospect of his coöperation and companionship in this strange land gave new zest to the adventure.

As Ames summed it up, here was a man who had been through five months of interesting work with his father, had earned the close intimacy that came from confidence well placed, and afterward established by mutual dependence under conditions of remoteness and danger.

There was in this a tangible though indirect link of relationship that appealed to Ames and partially fed a yearning for the paternal love, counsel and comradeship that had never ceased since the day of separation. Small wonder that Thorp fitted harmoniously into Paul's sphere of

living and became a signal factor in the coming years.

During the progress of the talk, Eph Thorp suddenly exclaimed, "I have a photo of your father; one he gave me in Chile," and he produced it from his meager treasury of prized possessions. It was a post-card print, one that Ames had never seen before. He took it reverently and for the first time in several years the tears welled up from the depths. "Dear, dear Dad," he murmured chokingly.

Then facing his friend and controlling his voice, he said, "The gun in this picture is the very gun in that canvas bag, Thorp. I wonder whether you will remember it?" And he brought it out.

Eph closed his eyes and grinned. "As to remembering it," he said, "I won't look, but just you squint under the trigger guard and see if there is n't a small letter 'T' scratched there."

Ames took the weapon to the electric lamp and examined it closely. "By George, it *is* there—I never noticed it before."

Eph stroked his thin cheeks and almost squirmed with satisfaction. "Well, sir," he informed Ames, "I made that 'T' six years ago

with the point of a rat-tail file,"—and then he waited.

It was Ames's cue. "Why?" He knew that was all that was required of him.

Thorp laughed aloud with a trace of embarrassment.

"Tell, you," he began with labored care, "on several occasions I used that piece, a mighty fine shooter and I guess I coveted it, perhaps. One day after cleaning and oiling it I just naturally vaccinated my initial on it."

"Yes?" Again Paul smiled encouragingly and this time knowingly.

"Well, your father expected to come down here again and I expected to see that rifle again. It's a wonderful iron, and I had the stage all set ready for happenings. I planned to say to your father, 'Say, Governor, if an "A" marked a gun and it was plain it belonged either to you, or to me, what would the Court hold?' Course he would say, '*To me,*' meaning himself. Then I would come back and ask him, 'What if it was marked with a "T"?' and all he could say would be, 'To you, Thorp.' Then I would point to the initial. I knew what would happen."

The vaccination "took."

"Thorp," Ames spoke with judicial gravity,

"would you—ah—lend me your rifle on this trip?"

"It's yours, sir, for so long as you may require it." Which reply, all things considered, Ames allowed was a choice morsel of delicately balanced diplomacy.

Thorp had declared he was not "particularly startled" to see Ames. He explained in a matter-of-fact way, "You know I needed what you or somebody else had to supply; it was n't anywise unreasonable or wrong and I knew it would come. You were easy to spot, too," he added. "These people here are as red as the 'dobe houses they live in and a Northerner stands out like a white llama in a poppy field."

"You are a practical philosopher, Thorp."

"No, I guess not. Somebody once said that a good definition of a philosopher was a fellow who bore with resignation the misfortunes—of others. You know," he continued musingly, "if creation had n't started off right and had n't been governed right ever since, it would have stopped long ago; if we work *with* that government and not *against* it, we run a good chance to get the things that are best for us. Hell, I'm preaching!" Whereupon he bade Ames good night and abruptly left for bed.

CHAPTER IV

THE Ames equipment has since been referred to as the most completely ordered of any explorer or prospector in the republic of Ecuador since the Whymper expedition in 1880 and, in some details, Ames's outfit was probably better provided than that of the courageous Chimborazo explorer.

The general course of Paul's initial survey was in a northeasterly direction, over the high Quito plain, to the gradual slopes of Mount Chimborazo, but owing to painstaking geologic and mineral examinations at every stage the traveling was necessarily slow.

Camp would be made in what appeared to be promising terraine and very frequently occupied from three to five days, Ames and Thorp leaving their retinue at the main camp, starting off in the saddle each morning and returning to their tents for sleep.

The elevation of the Quito plain was well up to start with, generally around ninety-five hundred feet, or about twice the altitude of Denver ;

consequently Ames for two weeks was forced to moderate his exertions to accommodate heart acceleration.

For four months the work went on in territory varying but little in altitude or in geological characteristics. Huts of cattle herdsman were seen from time to time and the flowers and animals of the country were studied as side diversions. Interest seldom waned.

To right and left were to be seen the summits of noble volcanoes—cones symmetrically pointed, or with peaks blown off, their shoulders and sides blasted and seared from internal fires—then a smooth white dome serene and glistening in the brilliant sunlight.

“What about snows?” asked Ames of Thorp. “Are we going to be interfered with?”

“If we were in North America or Europe we would be,” Thorp told him, “but not here so close to the equator. We will see herds grazing as far up as thirteen thousand five hundred feet, maybe fourteen thousand, and no snow.”

And so it proved, for the snow line was surprisingly high and the vegetation on the high Quito plain in almost all sections richly luxuriant.

As the travelers climbed higher in the weeks

that followed, the mountain was marked by magnificent valleys of erosion and, for the greater part, the many specimens examined were taken from granite, gneissoid and schistose rocks with a gradually higher proportion of trachyte and porphyry, the sides of the lofty mountains being strewn with immense beds of gravel and volcanic debris.

It was now early in April. From the standpoint of actual discovery the results thus far had been almost negative, but the prospecting had been most thorough and many of the explorative penetrations had gone well into the snow zones. These proved less favorable to the discovery of encouraging specimens than the lower levels.

The field of investigation then curved to the west and north and travel was hastened, owing to a greater familiarity with the surface signs and the experienced ability to read them without resorting to the usual laboratory tests.

One morning while Ames was filling a wash basin he noticed Thorp standing motionless, intently contemplating a small rock which he held in his hand. There was in the circumstance an excuse for inquiry.

"Anything interesting?" Ames called.

"It *would* be interesting if it could talk," answered Eph enigmatically.

"Do you know, Boss," he continued, coming to Paul's side, "I have a great respect for a stone. I guess I am a stone Shriner, of stones that have worked their way to the light particularly, that look Sol in the face and tell him to cool off and begin a history of solid things. Me for the top of the earth. I never could understand a coal miner's state of mind. Under the ground is no place for a live man."

He paused, then went on, "To stand with your feet on the top crust of this big bubble of earth with your head pointing toward the star dust is a sign of great favor, I'd say. Yes, sir, to be able to put your arm around the waist of a beautiful living and breathing tree—the Lord's noblest vegetable—and look straight up with nothing between you and the planets but its green lace bonnet, brings a fellow near to a sense of the cosmic—or so it seems to me," he concluded in some confusion.

Ames was silent. He had learned how best to draw Eph out. That citizen resumed his contemplation of the rock in his hand. "Take this piece of granite," and he stroked it caressingly, "it's mighty venerable. I have often

thought that there is nothing that a man can touch that is so old as a stone, that has n't changed since the time it was made. One might know it ever so well but he has got to *guess* its history."

Ames waited but the pause was so long that he ventured to coax Eph to elaborate his thought. "The story of a stone is the story of the planet," he quietly observed.

"That's just it," resumed Thorp. "It holds within itself the knowledge of a world's beginning and it's a secret locked by a silence that cannot be broken." His cobalt eyes took on a glow that reflected the beauty of the thought. "Mute! Why? Struck dumb with amazement because it was witness to the convulsions of a world in the making!"

Ames's admiration was genuine. "Eph, that's a big thought beautifully expressed. I congratulate you, you have poetic inspiration."

"Nope, nothing like that, but I've read a lot of it—good and bad."

"And a lot of geology and mineralogy," was Paul's tribute.

"Yes, some. Practically all of my 'book learnin' ' was picked up out of school. I only went through the High—that was in Concord,"

said Eph, unusually speechful. Then he washed the earth from his hands.

There was a business matter he wanted to approach. "I'm not meaning to criticize the plan of campaign," he said by way of introduction, "but I'm wondering whether we're going about this hunt in the right way. There are lots of minerals I know more about than I do about the radium ores. I never saw any to recognize them, but I have read that the presence of the radium bearing ores is plainly indicated by surface signs, related minerals and all that. Somehow I think we are not looking in the right pew."

"You may be right," was Ames's defense, "but the country has n't been prospected very much and the fact that nothing of the radium persuasion has ever been found by us is no proof that it is not here."

"That's all right as far as it goes, but usually there are tables of experience or rules of demonstration about such things that can be consulted—might be time-savers."

Ames then explained his centrifugal theory and also told Ephraim that he was not depending entirely upon the atomic weight of radium in its relation to centrifugal velocity, but that

he hoped possibly to find the precious metal in some new metallic combinations, or perhaps even disclose some mineral new to science, some substance with unfamiliar attributes.

"You can't make a helpful chart of an unknown country," Ames elucidated. "We are doing explorative work and we must be the chart makers. We are theorizers hoping to define our rules after demonstrations. When we find the deductive quantity ten we can then say it is the result of seven and three, or eight and two.

"We are looking for a tangible something, we are not following abstruse formulae—furthermore there are no *positive* formulæ available and the others don't get you anywhere."

Ephraim made no reply but he was not convinced.

"Take Edison," Paul elaborated his position, "My father knew him—studied him against the background of his amazing accomplishments. Edison treads on rules and theories, uses them, of course, when they are at hand but is never limited by their presence or absence. He is less of an inventor than an experimenter—an explorer, perhaps—but when he needed some substance to make a successful filament for his

incandescent lamp and did n't know what would do the trick and nobody else knew, do you suppose he sat down and figured out the exact atomic and chemical constituency of material elements, using a library and a lot of sharpened pencils? *He did not!* He collected a few hundred thousand different kinds of matter and then he and a squad of assistants tried them out until ultimately they hit upon the right one. The demonstration was parent to the theory."

"Enough!" Eph yelled mockingly but convinced, pounding a box with his testing hammer, "the ayes have it—rah rah radium."

The evening of May first closed the longest day's travel accomplished by the expedition. Only a few tests had been made along the way and the distance covered was almost forty-five miles.

While his men prepared the camp for the night Paul figured the location as latitude approximating $1^{\circ} 20'$ N. and longitude 79° W., intending to verify his estimate by sun observations the next day.

After supper with pipe for companion he sauntered off for a jaunt in the moonlight; he would sleep better after a few kinks had been stretched out of his saddle-cramped legs, but a

more definite motive was to casually examine an outcropping pillar that rose from a level spot a half mile distant from the night's camp.

He found this pillar to be mostly of porphyry, about eight feet in height, tapering from the base to a top three feet in diameter.

Reaching up he felt that from its edge inward it seemed scooped out like a basin, at least so far as his hand could explore.

Rolling two boulders against the base and placing a smaller one upon them he was soon able to peer into the cavity, for such it proved to be.

This cavity or miniature crater was about twenty inches deep and, reposing in the middle of it was an irregular ovoid body of mineral matter about twice the size of a foot-ball, its surface pitted and shallow guttered in places.

Surrounding this mineral egg in its mineral nest he felt several inches of water, evidently imprisoned during a recent rain.

Ames made an effort to ascertain whether the mass was free or attached at its base but was unable to move it. Then with his head leaning over the edge of the cavity, partially supporting himself by his chin, he felt in his pocket for his match safe and muttered in irri-

tation when he remembered leaving that article on the camp table.

But in the moment of that search his eyes, now trained to function somewhat in the semi-darkness, recorded the presence of a feeble glow—a cold irradiation of greenish hue, but *light!*

Ames's heart gave a thump that shot a throb almost through his temples. Then he jumped—or fell—from his stone ladder and having come to earth again, at once regained his breath and equilibrium.

Three times more he made the ascent and triply confirmed the truth of light registration.

"Eph, Eph," he shouted, running like mad for the camp, "it's *here*, it's found—here—here!"

But his headlong rush was not long sustained for even the strength of youth is humbled by that thin, high air, and as he walked, subdued, above the sound of his own panting came the confused concert from an aroused camp, shouts and then the sound of a horse—ridden bare-back, he afterwards learned.

"All right—coming—coming." That was good old Eph's voice, and further back some nervous, dark-skinned fellow fired a gun.

"I'm all right," called Ames and then laughed aloud at the comic melodrama.

When Eph came up to Ames and found him unharmed and laughing he was speechless with anger—it was a witless joke. Throwing himself exhausted on the ground he was forced to allow Ames to talk.

"Sorry, Eph—too infernally bad—I got excited—could you hear me—tell you—I found it?"

Eph rose from his bed of stones, peered into Ames's face, gave his arm a pinch and sat down. Full absolution was granted. That wide grin meant nothing less.

Four henchmen, whose entry upon the stage had been skilfully timed to claim credit without risk, were ordered back to camp and on their departure Eph delivered himself of a short speech which he believed fitted the great occasion.

"Show me!"

"Come, Thomas." Following, he was shown and, though interested in the scintillant quality of the jewel, he was more deeply impressed with its setting. As mere matter there was more of it!

Daylight arrived late for the impatient pros-

pector and long before dawn he had collected the sledges, hammers, picks and chisels that might be needed, also including a few drills and sticks of dynamite.

"That 's somewhat like one of those sacrificial altars or basins the Aztecs used," remarked Eph as they approached the strange column after a hurried breakfast. "Hope we are not going to destroy the sacred vessel," he continued with spurious concern.

"We 're going to get the offering. The altar will have to take its chances," was the grim reply of the iconoclast.

It was not necessary, however, to resort to violent measures because the open stone envelope surprised them by surrendering its contents in the preliminary arrangements.

Ames was standing upon the rough staging that he and Eph had rigged up and, in the interval of waiting for the latter to join him on the platform, he inserted a pinch bar at the base of the egg shaped mass and gave it a little prod.

The object moved. It had been jostled from its anchorage.

"It 's broken loose," he cried to Eph, "bring your crow bar and maybe we can roll it out."

Eph was there in another moment and both men inserted the steel bars under the mass and heaved in unison.

And then what happened baffled understanding, disputed the testimony of the senses and set at naught the law of gravitation, thus sweeping the underpinning from a fundamental structure of human knowledge.

The solid mineral mass bounded high in the air and then floated toward the earth with the slow, buoyant movement of a rubber balloon inflated with inert gas!

Both men had lost their balance in the unopposed resistance to their effort and had fallen on their faces, first to the platform and then to the ground.

Ames was first upon his feet, his eyes fixed upon the puzzling sight with the stare of the sleep walker. The object had touched the ground, gently rebounded several times, then lodged at rest a dozen feet away.

"What—what—?" from Eph.

Ames was speechless.

Together they slowly approached the thing, touched it, raised it from the ground. It was like lifting a big, gray pith ball.

Again Eph spoke, "What the devil do you make out of that?"

"I thought it was solid," answered Ames recovering, "it's evidently just a thin shell of something lighter than aluminum." He pricked it with his knife blade, then scratched it, but the sound flatly refuted any theory of hollowness. Hurriedly seizing a hammer, he gave the mysterious object a little tap and then a harder one.

It gave out quite as hard and clear a ring as the hammer head that struck it. The mass was solid and dense, yet without weight.

With that enigmatical thing, that reason-disturbing object between them, the two men sat down to adjust their wits.

Ames now broke the silence, "If this is n't a dream, some sort of delirium, then we have stumbled on a tremendous manifestation of some new sort,—a revelation."

Whereupon Eph testified. "I hear you plainly, you hear me, don't you? That's your foot I am touching with mine, is n't it? You feel it and I feel you feel it; we are together here, conscious of the same surroundings, and if we are not alive and awake this minute, we

never were." Eph slowed in his utterance, "We are alive and awake, and must come to the plain conclusion that a new substance has been discovered."

"Eph, I'm glad you said it. That's the easiest deduction and certainly the obvious one. I was beginning to doubt my sanity. Now, let's look into that column again—I want to know whether this monstrosity is its child. Somehow, I believe it is of foreign origin."

They carefully studied the column and found it to be of ordinary porphyry and its broken fragments normally heavy. Examination of the hollowed out nest made it plain that the attachment of the egg shaped body was only the natural adherence effected by a slaking of some lime elements which produced a binding medium like crude cement. The examination proved, also, that the elements in the strange mass were physically different from those composing the column.

But why should the mass have chosen that extraordinary resting place, or why should that place have been chosen for it? Here entered a new problem.

"Possibly a meteor,—a detained messenger far from home," ventured Ames.

"Yes, perhaps," Eph replied, "but such a remarkable landing! It seems unlikely. Maybe some earlier discoverer many years ago purposely cached it there, meaning to come back for it, and forgot it, or died."

"Well, we will take the stranger to camp and cross examine him," was Ames's practical conclusion.

But, for obvious reasons, only a limited analysis was possible. The small scales were difficult to use with so bulky a mass and acid tests revealed nothing extraordinary.

"What are you going to call the blooming stuff?" asked Eph that same night.

"I've been thinking about that," Ames replied. "I suggest we christen it 'Nilgrav.'"

"Meaning, 'without weight,' I suppose," said Eph. "That's appropriate, but you're too modest. Why not Amesite or Amesmetal?"

"No, I like Nilgrav better."

And from that day it was Nilgrav—Nilgrav, the mysterious, destined to become far more marvelous and famous than radium.

The metal Nilgrav had the general appearance of zinc, with ductile qualities midway between lead and copper, tardily fusible before the blow-pipe, insoluble in any of the acids

in the equipment and its relative atomic weight was indeterminable.

Upon the surface of the mass in some places were minute veins, darker in color than the main bulk, and in slight relief, while in several places along their length were traces of what appeared to be uranium though in almost impalpable quantities.

But to the presence of even that unmeasurable amount and its radioactive property Ames credited the possession of his remarkable specimen.

"How much would Nilgrav weigh if it behaved like it belonged to the known mineral family?" asked Eph, the next morning as they viewed their discovery.

Ames again measured and weighed the mass, examined a morsel under the microscope and figured a moment.

"The structure and density I can compare more nearly with those of copper than any other metal, and that's almost a guess," he said. "Roughly speaking, here is a little over a cubic foot of metal. A cubic foot of copper weighs five hundred and sixty pounds, so this should easily weigh over six hundred pounds,

whereas in fact we have found it weighs about two and a half ounces."

"By heck!" exclaimed Eph, "that 's uncanny."

Ames was checking his calculations. Then he resumed his figuring and in a few moments nervously rubbed his forehead, abruptly arose and paced slowly back and forth in a brown study.

Eph waited expectantly for some announcement but none coming, he made bold to inquire, "What 's the trouble, Boss?"

Ames stopped and faced his questioner. His words were quietly spoken, but there was a note of mental disquietude in them. "Do you know, Eph, it begins to look as if we were at the door of a new hall of understanding, or have run across a phenomenon that is too much for us. The ratio that the actual weight of Nilgrav bears to what it should weigh according to specific gravity and to Newton, is as one compares with thirty-six hundred."

"Seems so." Ephraim was not unduly moved, however. "Then, what?"

"Only this," Ames raised his voice. "That ratio is almost exactly the ratio of difference that scientists have figured prevails between

the weight of bodies on the surface of the moon and the surface of the earth."

"What!"

"Bodies on the moon weigh thirty-six hundred times less than they would weigh on the earth," Ames elucidated.

Eph was duly impressed. "Do you mean that Nilgrav came from the moon?"

"No, I don't. It does n't seem physically possible. It would have been fused—evaporated, unless it was a huge mass when it started. Furthermore being *here* and not *there* it is under a different government; subject to the local conditions and laws of earth and earth's gravitation. Might have been a satellite of the moon, gradually weaned away. I simply don't know," said Ames helplessly.

"There it is—mute—mute," murmured Eph, placing a big hand on the messenger that bore a message in a code they could not decipher.

The entire day was spent in a more thorough examination of the mass of Nilgrav. Ames drilled through it to the core and found it compactly solid and subjected the particles to all the tests permitted by the available apparatus; so physically, at least, he was becoming better acquainted with his find.

By evening his senses became more reconciled to the new experience of material levity—the weightlessness of the mass. There was a partial recoil from the shock and he now manipulated the metal without heavy handed fumbling. How soon do new experiences become listed in the catalogue of the commonplace!

When we contemplate gravity we have been taught that we are dealing with an absolute fundamental of the universe.

But Ames had begun to reason from the basis of the relative. After all *was* there anything absolute in the so-called knowledge of matter?

Conjecture, deduction, report; each last report displacing its predecessor and contributing its quota to the changing nomenclature of matter and matter government. Why be surprised at the latest phase? In turn it will surrender to another!

Ames was seated upon a tilted camp stool smoking his second cigar and with shameless profanation using Nilgrav as a foot-stool.

Eph entered the tent and noting, remarked, "Afraid the thing will float away?"

"Eph," was Ames's reply, if not answer, "I

have been trying to mentally digest this thing and think I've made a start." He paused. "There is nothing so astounding in it after all," he continued. "It might be, if we had n't other experiences to prepare us, but we must remember that we have. The atomic weight of uranium is two hundred thirty-eight point eighteen and that of aluminum twenty-seven point one—a little more than one-tenth. If we held in our hands a cube of uranium weighing, say five ounces; and, supposing aluminum were unknown to us and somebody should hand us a cube of it, same size but weighing only half an ounce, we would be amazed when told it was solid metal.

"Now then, with that aluminum cube in our hands—to us now a familiar kind of matter—let somebody hand us a new metal weighing less than aluminum, in the same ratio that aluminum weighs less than uranium, and we would be stupefied to know that it weighs but one tenth of an ounce.

"And if it happened that we were the first to discover it, we would be flabbergasted. So, if we skip a few such preparatory steps, we get to just the situation that we experienced yesterday. There may be no intermediate steps,

who knows? If there are, they will be discovered in due season."

"Perfectly reasonable," replied Eph. "It satisfied me."

"It satisfied me just this much," and Ames's face wore a tired frown. "It destroys my—something like superstition—and it urges me to seek the nomenon."

"Just what do you mean?"

"Well, I'll try to explain. Finding a radically new kind of matter is only the beginning of our work; we should find the law that it manifests, or know more of the old one." Ames tapped the mass with a pencil. "We have been handed the *sum* without doing much head work, and it's up to us to earn the gift by working out the quantities and stating the rule."

"What I need now is a good reference library," Ames said a little later, "and a long talk with that good friend, Dr. Worthington."

There was in his outfit, however, a chest of his student books that he had carried with him ever since he left New Haven; and from some of the standard works it contained, he obtained considerable help.

What he now sought was testimony that went counter to the Newton and Keplerian deduc-

tions and he spent a studious week in this pursuit. Encouragement was offered in the explanations of Le Sage, who maintained that gravity was due to the pressure upon portions of matter produced by the impact of streams of particles traversing space in all directions; and the later theories of Lorentz, Thompson and Schuster, based upon the conjecture that all atoms of matter contain positive and negative charges; and assuming that the attractive force between unlike charges in two neighboring portions of matter is greater than the repulsive force between the charges.

There was also open to Ames, with this new matter now in his possession, a probable opportunity for developing into demonstration the now established theory that bodies as small as molecular had never been proved as being under the same government as that governing larger bodies at measurable or perceptible distances.

"There is, I am certain, some tremendous molecular struggle going on in this mass of metal, a successful internal rebellion against the force of gravitation," was the way Ames put it in a letter which he had started to Dr. Worthington, but which he never had a chance to post.

Two premises were plainly forced upon Ames, the first being the attribute or property of levity; and the second whatever significance was offered in the locale of its discovery.

The first forced upon him the suggestion that as the attraction of gravitation was almost completely annulled, it must be on account of an opposing force, or counter repellent; and the second, that somewhere in the equation, consideration must be given to centrifugal influence, necessarily greater at the equator where the axis motion, or velocity, is at its maximum.

His studies opened up the question whether Newton had really stated the whole law of gravitation, or had, in fact, defined only half of it.

Newton defined the exertion of force operating in one direction. Downward, for objects on the earth—attracting or drawing toward the center of the globe. But it still remains for us to discover or uncover the exertion of a constant force operating in the opposite direction.

When this is revealed we shall have at our command and ready to utilize, a reciprocal energy that would provide a costless power needed for all purposes; be able to invoke and

evoke limitless energy, controlled, utilized and distributed at will.

We are able to take advantage of the downward pull of gravitation in the fall of water, but every function of nature is logically compensatory, balanced, equilibrated, and the fact that the full force of gravity was not manifested in the falling of Nilgrav seemed to justify the conviction that Ames had recognized the manifestation of the counter force and that it was susceptible of being traced, captured and harnessed.

In his attempts to conceive the principle and, as it were, the fixed location of any such counter force, there was forced upon him the conviction that a likely region for inquiry might logically be located at the directly opposite geographic point, at a spot on the globe precisely through it—the furthest removed from the place where a specimen of this related matter, Nilgrav, had been found.

Such a region should be under precisely the same centrifugal influence as that in which Ames was now working and might yield a correspondingly interesting specimen!

Where would such a search lead?

One thing Ames did not have in his outfit was

an atlas of the world, but fortunately Eph was able to help out.

"What land or water would we strike if we went straight through the center of the earth and came out exactly opposite where we are now?" was the question he put to Eph one day, as he studied his mysterious discovery.

"China, maybe. Let's look," Eph rejoined, and at once went to his kit to get a world map—a flat projection.

Being now in latitude $1^{\circ}20'$ N. and longitude 79° W., they found that the diametrically opposite point on the globe would bring up in $1^{\circ}20'$ S. and longitude 101° E.—just a hundred and eighty degrees away.

The altitude where the Andes specimen was found was ten thousand seven hundred feet and that fact was also considered in defining the exact distance from the earth's center.

The examination of Eph's map disclosed the very interesting and gratifying information that such a point was found to be on the island of far Sumatra; and being in the vicinity of Mount Korinchi it seemed almost assured that a corresponding altitude could be found somewhere in its ascent.

Interest now ran high in the Ames camp,

bordering upon excitement. Nilgrav was dominating the market. Radium had dropped a hundred points below par with no signs of recovery!

Eph asked three questions in the same breath, "Going to Sumatra? Take me? When do we start?"

Ames's answer was a three in one, "We'll be packed in a couple of hours and on our way. Your job, Eph, will be to guard Nilgrav with your life."

While Eph supervised the work of the men in preparation for the impulsive departure, Ames made a final survey of the adjacent fields on the chance of picking up anything of correlated importance that might be overlooked, in obedience to the same impulse which prompts one to take a final look into drawers and closets before leaving a hotel.

Ames's last act was to confirm the correctness of his observations establishing geographic location and altitude, and the caravan moved on schedule time for the return to Quito, Guayaquil and Panama.

At Panama, Ames and Eph were lucky enough to board the steamship *Molucca*, just then in the canal locks, bound from Liverpool

to Hong Kong. At Hong Kong they changed for Singapore and Batavia, ultimately reaching Muntok, the port of Banka, Sumatra, the day commemorating American Independence—the most sickeningly hot one that Ames ever suffered through—and just fifty-one days' travel from the Andes camp.

CHAPTER V

BEING in Sumatra by no means implied arrival at their destination. The journey to the residency of Padang—the district that held in its lap the focal spot of intended survey—was a much harder trip than mere miles indicate to those who have never made it. Interesting indeed but full of hardships, the hardships of extreme heat, the torment of insects, wretched food and villainous traveling companions.

The bad drinking water which they were forced to consume on the pilgrimage was particularly trying to the two men and for several days both were threatened with the dread fever, which however yielded to prompt and Spartan treatment.

For the first time in their lives they heard the roarings of tigers ranging wild in the jungle and twice saw herds of elephants. Eph had a chance, long distance shot at a rhinoceros, which the creature refused to notice. Antelope

and buffalo were also seen at times and multitudes of the queer little Malayan sun-bears.

Their journey took them also through dense forests of valuable timber and photographs were made of scenes that were phantasmal in their tropical lavishness; rare butterflies, pheasants and trogons were frequently observed, but the strangest meetings were with the inhabitants of the country. Around the coast were half-breed Malays beyond counting, a few Arabs and, as they progressed west and north, the savage Orang-Kabu.

Approaching the highlands of Padang they saw the first of the pure Malay stock, the Menakabu and some Dutchmen, from both of whom they later drew for their guides and camp help in the explorations around Mount Korinchi.

It was two weeks before Ames had his prospecting outfit in shape for serious work. It promised to be a short excursion, for the theater of operations was a comparatively limited one. Even so it was not such a diminutive spot as it appeared on Eph's map. Not by any means. A minute pin-point on that map was of course amplified in terms of square miles when translated into globe surface.

For four weeks Ames carried on his search

within the radius of a ten mile circle around a pivot that observation showed to be longitude 101° E., and latitude $1^{\circ}20'$ N., but nothing of an encouraging nature was disclosed. It began to look as though the search were in vain.

The country for many miles around showed diversified geologic and mineralogical characteristics, the tertiary formations covering a very large area, but limestone with carboniferous elements occupied most of the surface. Limestone, slate, clay and schists were common enough, together with the familiar metals in unprofitable quantities.

"Nothing doing," exclaimed Ames wearily at the close of an unsuccessful day.

"What's our altitude?" asked Eph.

"Oh, about nine thousand, nine hundred. Our field today varied from ninety-seven hundred to ten thousand feet."

"What floor did Nilgrav have his office on over there in the Andes?" questioned Eph.

Ames smiled with effort. "Ten thousand seven hundred feet," he said.

"Let's take the elevator for that floor, even if it does take us some distance from this precise spot," suggested Eph.

"My observations may be off somewhat,"

admitted Ames, "but tomorrow we will move further up this slope and to the west."

This search in Sumatra was quite a different affair from that in Ecuador and Ames was beginning to realize it. Over there he was looking for just one thing and found *another*, found it accidentally. Here he was now looking for something very definite—substitutes would not do—and the physical appearance of that definite something he could not even guess. For aught he knew to the contrary the force or energy manifestation that he sought might not be objectified; it might be as unseeable as gravitation, magnetism or the principle of arithmetic.

There is no doubt but that if Ames or Eph should have been asked what the thing that they were seeking, *looked* like, they would have replied that even if it were a matter object, they had no idea what appearance it would take. Yet, in their minds' eyes, there constantly recurred a mass resembling Nilgrav. Perhaps it was that which was misleading.

It certainly was a large haystack and a small needle.

A sense of depression was growing upon Ames, augmented no doubt by climate and mal-

nutrition. This was troubling Eph more than he liked to admit and it induced him to propose a new plan of campaign.

"Boss, you're getting sick and I want to recommend something. Let's make for higher country *at once*, get way up on Korinchi and slowly work down, instead of slowly working up."

"Sounds good to me," Ames assented. "You're off your chow yourself, old man."

The revised plan was put into effect that same day and proved a wonderful restorative; a big return for its cost of three weeks' time.

But soon again the hardships began to pull on the G string and the orchestra needed tuning up. This time it was Eph who drooped under the stress.

"The descent into purgatory," he muttered on that particular morning, gazing toward the slope which they were prospecting by slow stages downward. They would soon again be on the same level where the work began.

The little caravan halted for refreshment shortly before the noon hour. A clear, deep pool at the base of two split walls of granite, invited a plunge.

"Too cold," Eph called to Ames, after swishing around with his hand.

"Good to drink then," said Ames, as he made his way to the place.

They both drank. So did the Dutch guide, the Arabs and the animals.

The water was almost ice cold and filled a basin probably a half acre in extent, the depth so great that in its center, bottom could not be seen. The sides pitched abruptly down from the heights, but in one place there had lodged some submerged broken slabs and boulders of granite.

"Not a fish," grumbled Eph, as he and Ames gazed into the crystal depths.

"That looks like a big cannon ball," Ames remarked, pointing to a round object pinched in the cleft of two walls and covered with moss and slime. It was in six or eight feet of water and ten feet from the edge.

The two men exchanged understanding glances.

"Better give it the once over," was Eph's comment. "Must n't lose any chances."

They started the task in a perfunctory manner for they had had many disappointments.

During the past ten weeks they had tapped, fused, rolled, broken or felt ten thousand different specimens. Small wonder that hope seemed long deferred.

It could be said for this latest prospect that it possessed some novelty, enjoying as it did the distinction of a truly orthodox baptism; and being hard to dislodge, it gradually absorbed interest and effort. So stubbornly did it resist the efforts to free it, that the would-be liberators suspected the cloven walls had closed in upon it since its lodgment there.

Finally Eph trimmed a rope harness and rested a stout sapling against the obdurate sphere, then called to DeBeers, the guide, "Now, when I hit with the sledge you have your men pull."

The fourth blow and the fourth yank on the rope did the trick.

The slimy green ball popped out like a watermelon seed from a boy's fingers, then shot obliquely upward, striking the granite wall at the water's surface with the crash of violent impact. There it *floated—lay immovable*.

And in that instant Ames knew that the search was over, that the Andes coefficient had been found.

And of course Eph knew it also. The air

was filled with wild and joyous howls and the sledge hammer hurled a hundred feet. De-Beers and his troop of Arabs, stared, scowling.

But Ames was silent, outwardly unmoved. He was assured that the corresponding element had been secured but a strange sense of apprehension, almost of dread, had awakened within him.

"Shake, Boss, look at our prize there. Riding the wave like a sea-sled. Does n't draw a half inch. Say—" and Eph stooped a little, the better to peer into Ames's brooding eyes—"you look like two of the Gloom brothers. How come?"

"Just speculating on what the new assay will show," Ames responded. "It behaved differently from the other somehow. Notice it?"

"Yes, I did. Maybe it is n't metal at all. I'll bring it out."

The green ball still clung to the granite wall like a magnetic toy to the side of a tin basin. Eph poled it toward him but it escaped, scurried back twice, both times toward the north.

Ames finally got the slippery mass in his hands—there was a pronounced lateral pull. That was a new phase. In that particular to

begin with, it was different from the Andes element.

Scraping away its thick coat of slimy green he found the specimen almost perfectly spherical, pitted somewhat upon its entire surface, but, superficially, the structural composition appeared similar to the Andes specimen. But a constant strong pull to the side—toward the north—marked the principal difference.

"We 'll stay here a few days and look this over pretty carefully," Ames said to Eph as he led in the direction of the halted caravan, then about two hundred yards distant to the south.

Eph was carrying the metal ball, pushing against it with some force to overcome its pull when it slipped from his hands and rolled determinedly toward but not to the exact spot where it had been found. A wall of rock prevented this. The captive was again recovered but proved a hard prisoner to take to headquarters. The nearer Eph got to the camp location the greater became the reluctance—the stronger the backward pull. This became so great at a distance of a hundred feet from the outfit that Eph called to the Dutchman to help him.

At the same moment one of the pack mules was seen to bolt from the caravan, heading to-

ward the south. Two Arabs started in pursuit.

Before the Dutchman got to Eph the tension had greatly lessened, the resistance put up by the ball was less than half. Eph was nonplused and looked rather sheepish when De-Beers sneeringly failed to understand.

Eph soon had his charge safely in camp and sat upon it, watching the two attendants catch the truant mule. He was exceedingly interested, for that mule bore upon his back the specially made box containing the Andes specimen which was Eph's life job to guard.

Cursing and beating the offending brute the two Arabs now approached the outfit. Eph then shifted and placed firmer hands upon the unstable ball, for it had begun to grow restless in a desire to travel.

The reason came to him and to Ames at the same moment.

Helping Eph stabilize the ball, Ames sent De-Beers to keep that mule at a distance.

Ames now remembered while walking in advance of Eph he had noticed the mule standing with rigidly braced legs as when sliding down a steep bank. The animal had resisted the strain until it became too strong for it.

"Now, *what* do you know about that?" panted Eph.

"Just another phenomenon," laughed Ames. "Looks as if we have met a strong negative force here—the power of repulsion—and it seems as strong as the power of attraction. The two specimens are repelling each other with all their might and main."

"That's just it," translated Eph. "They are divorced and now hate as hard as they loved. They will be tough companions to handle with each pulling like a tractor."

That the study of the Sumatra element was possible only when separated from its incompatible mate from Ecuador was made certain when Ames removed the latter from its box and tried to conduct some preliminary experiments.

The moment that the Andes element was removed from its moorings it manifested a strong repugnance for the Sumatra one and tried to escape in the opposite direction.

Here, then, was the first definite lesson in the new physics. The two elements exerted a repellent influence upon each other, the force of repulsion being equal to their weight if the force of gravitation were in effect; or in other

terms, the weight of these bodies was determined by lateral instead of vertical ponderosity.

Was it a new manifestation of centrifugal force, some atomic activity hitherto unknown, or the normal functioning of abnormal metallic elements?

Ames set about to know. He had been measured for a large order.

Hume said, "Man is the measure of his world."

Columbus searched for India and found America. Becquerel looking for new sources of X-ray radiation found uranium. Mme. Curie seeking the cause of the radiation from uranium found the essence, radium.

Suppose that an entirely new form of matter *had* been disclosed and entirely new activities revealed—why be disturbed, why marvel?

Already the expositions of radium should prepare us for any rearrangements of established knowledge.

Professor Soddy of Oxford, in one of his very interesting lectures, stated that "the century which has just begun has seen the first definite and considerable step taken into the ultimate nature of matter or atoms, which is

in one sense not merely an extension of existing knowledge or principles, but a radically new departure. Radio-activity is a new primary science, owing allegiance *neither* to physics nor chemistry, as these sciences were understood before its advent. . . . the radioactive substances evolve a perennial supply of energy from year to year without stimulus and without exhaustion." *

The difficulty that confronted Ames in handling and transporting the two inimical elements was speedily solved. No such inharmonious relations were to be tolerated in the camp outfit and they were corrected with firm purpose and strong hands.

The Andes and Sumatra incompatibles were forced into touching intimacy, bound with ropes and straps and confined in a strong crate. Their mutual repulsion was now a matter of such local and counterbalanced exertion that it occasioned no further concern about restraint.

After this detail of control had been arranged, Ames at once started his research operations. The Sumatra specimen was drilled through and found to be a solid mass; the

* "The Interpretation of Radium, and the Structure of the Atom."—Fredk. Soddy.

elemental constituents were very nearly the same as those composing the one from Ecuador, but there were some molecular differences, so it seemed to Paul on first examination; or perhaps the variances might be owing to different influences after formation, or the separation from formative bodies.

Eph's opinion was that originally the two pieces had been parts of one mass and that, after breaking up into these two and perhaps other fragments, had been acted upon by counter influences after which they had been hurled to antipodal regions, or had gradually traveled under the strange law of repulsion until they had found the two terrestrial points of widest separation.

A quantity amounting to two cubic inches was cut from each of the two elements and then melted together into an amalgam.

This was no small task under the limitations of Ames's camp apparatus. He had, however, brought a good, but small laboratory furnace, the hardest detail being to develop the extremely high temperature and to sustain it long enough to reduce the metallic elements to a molten state.

The primary object of this experiment was

to determine what effect upon the atomic structure might be produced by the inseparable union of both repellent elements.

The product of the furnace was a small ingot of purplish metal, which when sufficiently hard, Ames turned out from its crucible upon a camp table.

Before it was cool enough to handle Ames and Eph noticed that it confirmed their advance opinion that the repellent activity was annulled because there had been no separation into the original identities during the process of solidifying. The blended mass now afforded a very satisfactory proof of axiom one, "things equaling the same thing equal each other."

Eph bent over and blew upon the ingot to hasten the cooling. The instant his breath touched the ingot, it floated from the table several feet and remained *poised in midair!*

Both men watched intently for the thing to slowly fall to the ground, but it remained stationary—poised in perfect equilibrium, absolutely at rest, a spectacle such as human eyes had never yet beheld since the world began.

It was fully expected that the metal compound might have but little weight, but here was a body of metal without *any* weight what-

ever, imponderable, a tangible mass of dense matter occupying two cubic inches of space, and *absolutely independent of the law of gravitation!*

So long as it weighed *something*, however little, it was allied in human understanding to the earth and subject to the earth's government, but to be weightless,—uncompromising levity, *that* transcended human understanding!

Ames and Eph sat staring at the object, both faintly realizing that to them had just been revealed a phenomenon hitherto withheld from mortal gaze.

In a few moments more the strain broke—broke in a way that hard tension often does—into comedy. “There *ain't* no such animal.”

Ames scarcely heard Eph's remark. He made no reply but smiled in a wan, tired fashion. Had he felt well it is probable that he would have been happy and exultant.

But Eph, after the first shock to the sensibilities, became almost boisterous. He appeared to thoroughly enjoy the distinction of being present at so noteworthy a première, a party in it too, and he wanted to talk about it then and there.

“Yesterday such a thing was impossible, un-

heard of, unbelievable. Now look upon it, see it there. It is tremendous, terrific. And just think, Boss, you are the man to show it to the world, the exponent of a new principle."

"An *old* principle, now first manifested," corrected Ames, brightening up somewhat.

"Yes, Boss," Eph said with fervent earnestness, "you are right. You are the appointed disciple of a truth that has lain dormant all through the centuries of man's evolution. We are only now ready for such a revelation. Who can even guess where this day's discovery will lead mankind?"

Ames's face brightened. Eph's words were good medicine.

"And don't be fooled by the thought that your responsibility is a crushing one," Eph admonished. "This thing has come to you *from* good *for* good. Take it quietly, deliberately, joyously, and without any frenzy. Take it as a high privilege and don't let it *drive* you. See!" he exclaimed suddenly, "here is the idea."

He placed the Nilgrav on Ames's head. "Hurt?" he asked.

"No, oh no," answered Ames.

"Weigh you down any?"

"Not a particle."

"*There* you have it," Eph exulted, "that's the lesson. Of all things in the world it was least designed to bear down upon you. Treat it earnestly but with joy."

That sounded like his father and Ames was greatly comforted.

"Thanks, old man, you are certainly right, I will do it. Now, let's turn in. It's late and we are both tired. We'll put Nilgrav to sleep on a nice, soft bed of air on a mezzanine stratus between the floor and the tent top."

A half hour later Eph tiptoed to Ames's camp bed. "Sleep, Boss?"

"No. What's up—besides you?"

Eph chuckled. "In reading the Book I just ran across Scriptural reference to your Nilgrav. It's *brass*!"

"Now, what's coming?" answered Ames.

Eph was sufficiently pleased with himself. "Here you have it. Second Kings, twenty-fifth chapter, sixteenth verse; 'The two pillars, one sea, and the bases which Solomon had made for the house of the Lord: the *brass* of all these vessels was without weight.'"

Ames's acknowledgment was a fairly good shot with a shoe.

The faintly luminous ingot watched through

Ames's sleep, but before he closed his eyes his thought had cleared. How well we know that many commonplace phenomena truly stagger comprehension—the growth of the plants, the germ of racial or family traits and inheritances; all such phenomena have been familiar for ages. Later, man has taken clay and transmuted it by reduction into metal, has reached out into the blue sky and extracted tons upon tons of solid mineral; words are heard thousands of miles from where they were spoken and man-directed electrical waves no longer require tracks of wire to run along.

"Expect Good! Don't let it surprise you!" And then he sank into deep, refreshing sleep.

The first object that greeted his opening eyes in the early morning was that purplish morsel of Nilgrav, balanced and motionless in the still, crisp air. There it was, making as truthful an appeal to sane consciousness as the table, stool or any other material thing in the tent, and, as Ames lay and contemplated it, he was aware that his attitude toward the miraculous manifestation had completely changed. The object seemed almost a scroll of revelation, imparting in its silent, waiting suspension the

token of attentive service; the vehicle of some great cause or purpose.

Involuntarily he likened it to the genie of his Arabian Nights and longed to test its submissiveness.

This morsel of matter acting in disobedience of known laws must be in obedience to other laws at present unknown. Within itself was the key to its own cryptic code and Ames warmed to the joy of its interpretation.

The responsibility of stewardship impressed him but did not now weigh him down. He resolved to guard the strange mineral as a sacred custody and permit no atom of it to leave his possession, nor would he divulge one inkling of information regarding it, until he was certain that the proper moment had arrived.

His inventive faculties were the first to awaken to a practical utilization of its unusual endowments. There might be some chance to employ that feature of long distance repellence.

"We might use that force in some mechanical manner to avoid railway collisions," he said to Eph, "some system of warning and automatic brake-setting on locomotives when approaching on the same track. It's like employing a

negative energy perhaps, but for that matter Westinghouse employed the negative air vacuum instead of the positive air pressure. We will keep that suggestion in mind."

All through the long October day waves of melody rose from his heart and more than once burst from his lips. In two more days the work would be finished and the homeward trip begun. Home! The Worthingtons, good old Eric, hard at work in Colorado. In all the long months he had heard nothing from Eric, nor had he found the opportunity to write, so absorbed had he been in his quest.

He had thought much about Sarah the past few weeks; tried to see himself with her eyes; to know how she really regarded him. Was it with the camaraderie of a sympathetic play partner only, or could he dare to hope she had for him a deeper feeling?

It would be a long, long trip, that homeward journey—over sixteen thousand miles, counting all the necessary detours, but the start would be in two days. Two days!

And he turned in early that night intending to indulge in the luxury of a long reading session in bed, pursuing every clue even hinted at in his references.

Shortly before twelve he grew drowsy, then stirred himself to prepare for the night's sleep.

It was the noon-time of night. The moon was directly overhead and the silver pallor of its frozen rays glinted through the tent flap. Ames stepped out in his slippers and drank deep of the cool, sweet air. The scene bewitched him.

"Sarah, Sarah, dear girl, it's love I have for you, yes, love, dear heart. All that I have tried to do, all that I have yet to do, is for you—that I may bring it as an offering—to be worthy of you." Then he whispered to the ear of the moon lady, "Tell her that, Luna, if she confides in you to-night, as I do." He stopped, frowned in self-condemnation and concluded his ruminations by addressing himself. "Paul, you moon-calf, get to bed." And so he did.

The mountain moods of Sumatra are sudden and varied. Just before seven in the morning a storm, so violently electrical that two of the Arabs were severely shocked, broke over the camp, threatening its complete annihilation. Its fury was of short duration, and in less than an hour was completely spent, although some wreckage was left in its wake under a clear sky.

While Ames looked after the physical wel-

fare of his men, Eph busied himself collecting and checking the drenched and wind-scattered property, little of which was found to be damaged and nothing of value lost.

The ingot of Nilgrav had fortunately been safely deposited in a cigar-box, tied with a stout cord. This box he found upon a storage battery which formed an item of the equipment. His first glance satisfied Eph the ingot was accounted for and the inspection was continued. The crate containing the two parent elements he found had blown thirty or forty yards away and observing that the wood had a scorched appearance, he hastily examined the contents and found the two masses had been affected by the electrical disturbance; probably a direct stroke, for they had fused at the faces in contact—were, in fact, quite thoroughly welded together.

Eph promptly reported the circumstance to Ames, but before doing so was interested to know what effect, if any, had been produced upon the ingot. He was speedily informed.

Upon lifting the cigar box from its resting place on the battery Eph noticed that it hugged close as though charged with mag-

netic attraction. The resistance was not great but distinctly noticeable.

Standing several feet away from the battery Eph lifted the ingot from the box but being unfamiliar with its new property of attraction, the metal slipped from his grasp and at once attached itself to the battery midway between the two poles.

"You little son-of-a-gun," Eph blurted, stooping to detach the runaway from its new alliance. But it clung close and let go only after a determined and muscular argument.

"Lock him up until he promises to be good," Ames laughed, after hearing the report.

But the Nilgrav culprit was soon summoned to appear for examination. Ames was interested to know how far the sphere of battery influence extended and in an hour had compiled a table, in part as follows: the ingot traveled toward the battery at an initial speed of twelve feet per second when liberated two feet away from it; and two feet per second when liberated twelve feet away. At thirty feet, its initial velocity was scarcely perceptible and at forty feet, it seemed removed from any impelling impulse whatever.

"When we get some place where we can recharge that battery we can tell more about this," said Ames. "This table of course only applies when the battery is pretty well exhausted."

"What do you figure happened during the storm to add that new quality to the ingot?" asked Eph.

"My guess is that it became absorbed with energy from the surcharged air or the lightning itself—became a little storage battery, or a sort of supplement to the battery there. Suppose we try that leading next." And Ames permitted the ingot to seek its new affinity, which it did and located as before, between the poles.

A cord with two twenty-volt incandescent lamps attached was then connected to the poles and the switch key turned. The filaments in both lamps flashed intensely for the briefest instant and went dead, the current was of far too great voltage.

"Busted 'em!" Eph observed. There was no doubt of it.

Ames next took the free ends of the wire running from the binding posts and in turn touched one, then the other, to the ingot of

Nilgrav. As nothing happened, he then applied both ends at the same instant. And at that same instant he was reduced from a stooping position to one parallel with the earth which he touched with every inch of his length from the back of his head to his heels.

Other events had also happened during that pregnant instant.

A rushing, hissing, snap-like sound, mingled with a breaking crash, a flare of something, not like a flash nor flame, then the choking smell of metallic fumes and acid.

The next moment, Eph, scared and breathless, was helping Ames to his feet.

"Don't you ever do such a damn careless thing again," he scolded. "Hurt? No? Eyes all right, eh? Thank the Lord!"

"Sudden, was n't it?" Ames managed to say, with a foolish half smirk.

"Come out into the air, but first—*look at that!*" said Eph, taking Ames with one hand and pointing upward with the other.

The devilish little ingot, serene and guileless as a cherub, floated demurely over their heads, exhaling righteousness.

The experiment had resulted in the wrecking of the storage battery with no impairment

or change in the ingot and had established in Ames's mind the fact that it had been charged with and then discharged more electrical energy than that contained in the commercial battery composed of plates and cells.

The almost incredible thing, so it seemed to Ames, was how such a small mass could possibly absorb and hold such a heavy charge of electricity, but this did not agitate him. He was beginning to accept the extraordinary as the natural and conventional order of things. All that was needed was familiarity of understanding to file them among the commonplace.

It was easy for him to conceive that Nilgrav might possess intensifying qualities, somewhat as the microphone amplifies sound and makes a whisper roar; or a faint current of electricity is made strong enough to paralyze the arm of a man simply by passing it through an induction coil.

And the size of a body of matter he knew was no reliable indication of its potential possibilities. The so-called "shooting stars" that flare in the heavens we know are usually minute grains of iron the size of pinheads and they crash into the earth's atmosphere with sufficient force to develop twenty horsepower, causing

from six thousand to eight thousand candle power illumination.

Consequently with two cubic inches of matter composed of known radio-active, and of other metal elements absolutely unknown and existing at the zero point of gravity, who could surmise what might not result when operated upon by known and unknown forces?

Ames was beginning in some degree to reconcile a condition of negative gravity with a theory that the coherence of opposite elements acted upon by two equal forces, say gravity and centrifugal force, possibly produce a neutral equilibrium. And while it seemed remarkable that so small a unit of matter could be the vehicle of such an enormously disproportionate volume of energy, he reflected that a thousand horse-power of energy, of deadly, virile force can be conducted—in actual practice is daily being carried—through a copper wire, the diameter of a pencil.

Consequently, every portion of that wire, every thousandth part of an inch throughout its length, must every instant be the material medium or vehicle of that tremendous energy and saturated with that full force while holding it in transitory suspension. We are accus-

tomed to contemplate this incredible fact without concern or puzzlement.

Exact or conclusive deductions were necessarily deferred by Ames until he should have access to the proper apparatus and instruments.

The large welded mass was folded in blankets and packed in a close box in order to preclude the queries of the curious, and the ingot carefully insulated with soft rubber. Then from the top of Eph's sombrero a home-ward pennant fluttered, as well as a stiff little muslin American flag was able to flutter.

The return journey was made over almost exactly the same route followed on the outward trip, and it was the last day of February when the *China* entered San Francisco harbor carrying the three notables, Ames, Eph and Nilgrav.

CHAPTER VI

PAUL AMES and Ephraim Thorp registered at the Fairmount Hotel on February twenty-ninth and checked out on March first.

Within an hour after arrival Ames had sent a half dozen telegrams, received replies to all of them before bed-time, and was beginning to feel like a reinstated American citizen.

He learned that during his absence in South America, the relationship between Hunovia and the United States had become strained.

Like many more of his countrymen at that time, he allowed himself to hope that adjustments might yet be made before our Government became involved in actual warfare, and felt certain that, however serious the aspect, no declaration of war was imminent.

"Certainly is good to be back and to know that your friends know that you're back," he said to Eph as they both stowed away enough food to founder Jack's giant. That they were now in improved health need scarcely be men-

tioned. The fact is that the restorative process had begun with the homeward departure from the Sumatra port.

The telegrams received included messages from Doctor Worthington, Sarah and the Colorado Radium Corporation. This last telegram was from the secretary and informed Ames that his wire to Herancourt had been opened in the absence of the latter, who had left for the East two weeks before; and urgently requested Ames to come to Denver at the earliest hour possible for a special meeting.

This message, while it was a shade perplexing to Ames, excited no apprehension. His principal feeling was one of disappointment that his anticipated meeting with Eric would be postponed for some days. Stopping over in Denver on the way East had been part of Ames's plan; and as Eph had asked for a few days in which to visit a sister in Ogden it was an easy matter to leave San Francisco on the following morning.

The two mysterious mineral units, joined as they were by a medium more binding than that which incorporated the Siamese twins, were awkward to handle, weightless but bulky, and

transportation offered a problem not easy of solution. Ames did not dare send the mass forward either as a baggage or express shipment; and even if carefully packed and carried in the Pullman, there was a chance it might excite the curiosity or cupidity of some porter or other railway employee who might jostle or handle it. Ames, therefore, secreted it inside a huge roll of maps and blue prints, taking pains to allow one of the drawings to be exposed and the entire bundle camouflaged with a large label marked, "Complete Plans and Specifications of Plant No. 17, Paul Ames, Engineer."

This bundle was personally carried by Ames or Eph and placed in the upper berth of the drawing-room occupied on the run to Denver; and it traveled with the dignity of high office on every stage of the entire journey eastward.

The called meeting was held an hour after Ames's arrival in Denver, and while it lasted but a half hour, it was not wanting in interest.

A brief report showed that the company had prospered and Ames was advised that there was a comforting sum to his credit upon its books and in the bank. Two shipments of

radium bromide had been made, the first yielding twenty-seven thousand dollars and the second almost forty-three thousand dollars.

Chairman Pilcher, anxious to have done with a disagreeable task, hurried along in his presentation: "Now as to Mr. Herancourt's work in this organization, I have to say that your return is exceedingly opportune, very fortunate indeed. You may not know that we have tried to reach you by cable and letter, but you had left the only points where we ran any chance of catching you. We have now ready for shipment nine hundred milligrams of radium bromide. Our two other lots were sold in New York, one to American and one to English interests. The present quantity is in great demand. French interests have bid ninety-five thousand dollars, as they need it very urgently. We wanted to sell to them at that figure but Herancourt opposed us and opened negotiations with a concern in New York closely allied with known Hunovian interests."

"His father's company," Ames commented.

"Yes, so we learned," Mr. Pilcher replied. "Despite our objections, Herancourt overruled us with his voting power, under your power

of attorney, citing Article 21 Section 6 of our bylaws. Then he went ahead and practically committed us to a sale."

"At what figure?" Ames asked.

"Same price offered by the French."

"Do the terms hold us?" again Ames questioned.

"Not now, by gravy, now that you are here!" Mr. Pilcher answered with fervor. "One condition was that twenty per cent. was to be paid on February fifteenth, balance on delivery in New York. That advance payment was not made and has not yet been made. The next day after it became due, Herancourt started for the East. He did not say what he was going to do, but we think his business is to protect the interests of that concern in this transaction."

"Legally, the deal is off, is n't it?" was Ames's observation.

"It would be, only that Herancourt is, or was, under your authority to renew or revise the agreement," Pilcher explained. "Herancourt evidently went East to handle the deal as he saw fit; he was to stop over in Chicago two or three days, that he did tell me, but he does n't know you are back in America, so if we act

quickly we may head off any extension allowance which he might agree to."

Ames's face showed puzzlement and a shade of impatience.

"It looks to us, Mr. Ames, as if we must get rid of Herancourt without delay," said the chairman, with a sweeping glance that took in all of the other directors. Full support being assured, he continued, "Mr. Herancourt's attitude for the past two or three months has been very disturbing to us. We knew that he was or had been a warm friend of yours, and naturally felt some hesitancy and considerable embarrassment in saying or doing anything that would reflect upon him in a discreditable manner, but. . . ."

Paul's gaze was now fixed steadily upon the eyes of the speaker, the face muscles hardened, and a frown swept across his forehead.

"But what?" he said quietly.

"Herancourt has undergone a change since our Government has put a little starch in the flag. Since Hunovia has been told that we mean business, Mr. Herancourt has. . . ."

"You know he is an American citizen," Ames interrupted sharply.

"Yes, and he may prove all to the good at

a show-down, but for the present it behooves us to be alert in our suspicions. I have no charges to bring against your friend, our friend, Herancourt, but let's play safe. Herancourt may have become a citizen, but that does not imply good citizenship. His father is opposed to it now that Hunovia is unfriendly to us. You know that a large proportion of the European influx during the last ten years has been composed of elements that regarded America simply as a field of material opportunity. To them, America has no history, ideals or traditions."

"I am with you, gentlemen, in playing safe; but what has he done specifically? What makes you suspicious?"

Ames felt that these men must have some cause for distrust, but he hoped to set his friend right in their minds. He regretted that Herancourt was not there to defend himself.

"We have not been appointed Herancourt's moral advisers or his sponsors," resumed the chairman, "and only so far as his personal habits are related to the business of this company have we any right to concern ourselves, but it is due you to know that Herancourt is running great risk of being gored by the rum

ox; he has been drinking heavily and persistently for over a year, and more than ever during the past two months. During those months he has been very hard to get along with. These gentlemen will doubtless confirm my statements."

They did so and gave Ames some examples in substantiation.

Ames pondered a moment. "All right, gentlemen, I am certainly with you in playing safe," and he felt in his pocket for a fountain pen. "Anything else to sign? If not, we had better draft the proper resolutions and wire Herancourt and his company."

Ames was plainly distressed, but maintained that while it was indeed deplorable, he had sufficient confidence in the honor and good sense of Herancourt to believe he would pull out of the slough. "I think I can help," he told his associates.

It was hard to reconcile such conduct with the Herancourt he knew and loved. It was beyond his understanding. His fellow directors saw he was hard hit, and expressed their sympathy and regret.

"I shall see Herancourt in a few days," he said. "I leave for New York to-night."

March sixth was a notable day for Ames. The Twentieth Century Limited brought him into New York precisely on time and twenty minutes later he was under a warm shower in the Yale Club. In another half hour he had engaged a vault in a safety deposit company, where he straightway deposited the precious Nilgrav bundle.

Then he called up Sarah Worthington at New Haven. His heart was jumpy—he admitted it. After all those months to hear Sarah's sweet voice in a minute or so—no wonder his heart went *allegro*.

Besides, he was feeling keenly the nerve strain concerning Eric—so he longed more than ever for the comfort of Sarah. The booth was cramping, and he left it to get a breath of fresh air—to pace a yard or two.

Then came his call.

“Is this the Worthington residence?” began Ames.

A man's voice answered. “Bless my soul, Paul, it's Balm of Gilead to hear you, dear boy. Sarah and I have watched for your call since yesterday. When did you get in? When will you be here?”

“This morning, to your first question, and

this evening, to your second. At least I hope by then to finish here. How's everything?"

"All serene—same with you?"

"Quite. Is Sarah there?"

"No, she had to attend a luncheon affair—just left; back in an hour or two. I can hardly wait to see you, Paul."

"That's just the way I am feeling. Has Herancourt been in New Haven?" asked Ames.

"Yes, yesterday afternoon and evening; he was to go back to New York this morning. He is at the Ritz. Then you have n't seen him yet?"

"No. I've wired him, and hope to see him very soon."

"Well," and the doctor's voice was a trifle cautious, "I think he needs some good advice. He's sowing the wind, I fear."

"So it is true! I could scarcely believe it. Do you think he will listen to me?"

The doctor answered: "I think he would rather talk to you than listen. He appeared to think you had gone back on him in some way, but did n't tell me how. May have told Sarah, but we have guests and I have had no chance to talk with her about him. She seems disturbed over something."

Ames concluded the three-minute talk by telling the doctor that he believed it would come out all right, and that he would tell him all about it when he arrived in New Haven.

Then he hastened to Herancourt's hotel and went directly to his room. At his knock the door was opened by his friend who greeted him with old-time cheer.

"Hello, Paul. By Jupiter! I *am* glad to see you, old man. When did you get in?"

"I 'm glad to see you, Eric," said Ames. The old love for his comrade surged up and throbbed through a long, warm hand clasp.

They entered the room and in the better light the two men exchanged quick inspections.

Two years had passed since they last saw each other and some changes were to be expected.

Ames's mental report upon Herancourt included the item of considerable additional weight, also more color, eyes smaller or perhaps encroached upon by puffy flesh, but certainly less ingenuous and direct, the face having lost some of the frank impulsiveness of two years ago. Some new influence had been modeling the expression during those two years, and had copied a graceless model.

It might have been imagination or the memory of Chairman Pilcher's word picture, but Ames thought that Herancourt gave out the reek of stale alcohol, not from the lips so much as through the skin, thrown off by exhalation from a rum saturated body.

In short, the general impression made upon a tolerant friend was that Herancourt had coarsened most distressingly, and it was a saddening shock to Ames. Herancourt's appraisal of Ames after his long absence could not have been overpoweringly flattering, for his eyes underwent further contraction in a critical focus and an almost contemptuous smile slowly parted his lips.

Ames had aged a half dozen years in appearance, his skin was bronzed; the frontal line of his hair had receded; he was much thinner and the steady blue eyes looked out upon the world with a maturer sense of balanced judgment.

Sensitive to the inharmonious vibration, Ames promptly began by thanking Herancourt for discharging the duties imposed upon him under the power of attorney and regretted that the latter's absence from Denver made it impossible to tender the acknowledgment at

the time the authority was terminated. He said, "My presence in Denver made it possible for me to relieve you immediately of further responsibility."

Herancourt expressed himself with a show of irritation; "But why did you rush matters? You might at least have waited long enough not to interfere with a deal I made under the power of attorney."

"I understood that the deal was annulled because the first of the agreement conditions was unfulfilled," Ames answered with careful restraint.

"The agreement was broken on a mere technical construction," Herancourt replied with some testiness. "Our company was held up only a few days in making that first payment—you can appreciate that owing to conditions an extension should have been granted by us."

"But for some reason it is clear that it was not granted." Ames still maintained his composure. "When you say 'our company' do you mean this Chemical Corporation? I don't quite understand. To me 'our company' means the Denver one."

At this, Herancourt eyed his friend sharply, but without raising his voice, exclaimed; "Don't

be a fool, Ames, sticking at fine definitions. You've double-crossed me on this deal. Why the devil did you do it?"

"Eric, you know I've just come from Denver, where I talked with our directors." He paused for an instant, uncertain just how to proceed. A momentary gleam of resentment flashed through Herancourt's eyes, and he interrupted: "And those old fossils have cooked up some fantastic yarn to scare you! And you listened to it."

Ames put up a deprecating hand, and continued. "The real issue is that until Hunovia shows a disposition to be less unfriendly, *our*, or at least *my* company, desires no dealings with this Chemical Corporation. I can only believe, Eric, that you have n't a proper understanding of the situation, or you would agree with me."

Eric's eyes again narrowed, and for a moment the situation was tense; he seemed on the verge of a violent outburst; then controlling himself, and with a return of his old impulsiveness, he grasped Eric's hand and exclaimed:

"Old chap, of course I'm with you, if you feel there's anything beneath the surface that is wrong. Here we are almost flying at each

other's throats, when after all we both stand for the same interests. You have been out of the country and don't realize the delicate situation in which a foreign-born citizen finds himself these days. Every act is criticized and judged from an unfriendly angle." His expression was one of grieved misunderstanding.

"We've all got to learn to think internationally," he concluded. "That's what I am doing.

Ames's old time confidence was practically restored in the wave of protective affection for Eric, which surged over him. "I think you are right, Eric. You have been in a very difficult situation but now that the Chemical deal is off, there is nothing more to worry about. We won't talk business any more. Tell me about yourself—you have seen the Worthingtons; how about Sarah? Has she changed much? I've been too far away for letters, so I'm two years behind the times."

"This is my first trip East in some months," Eric replied, "and letters, you know, may be revealing or concealing. You must judge for yourself." His smile might have been designedly significant but Ames passed it over.

They parted with apparently the old friendliness, Ames taking the subway uptown. He

still felt a slight degree of uncertainty, almost depression, when no longer under the personal magnetism of Eric, but dismissed it to picture the joys of the New Haven reunion. So Sarah and Eric had been in communication, he thought. Well, that was to be expected, for they had been good playfellows up to the time of the Denver venture. Then he recalled with a bit of a pang, that in the changed circumstances his first talk with Eric had passed without mention of the marvelous Nilgrav. It was certainly very different from the reunion he had pictured when in faraway Sumatra.

Ames caught the three o'clock express and in due time arrived in the City of Elms. There were only two people anywhere around the old red brick station—at least he saw but two—when he stepped from the chair car.

Then there was a tangled medley of arms, hands, heads, hand baggage and hats and, after the scramble, certain it was that each had been appropriately saluted, but in the confusion, no direct charge could be brought. Sarah alone was conscious that other travelers were present and colored under that consciousness.

"How in the world did you folks know what train I would be on?" Ames managed to ask, as they stepped into the doctor's car.

"Just one of Father's good guesses," Sarah hastened to inform him.

"How wonderful to be here again—nobody can know how happy I am," said Ames, settling back in his seat and checking off the familiar landmarks.

"Yes, we do know, my boy," answered the doctor, "and we are happy as you."

The car was turning into Chapel Street and the campus of Old Eli swept into view, the first patches of its new spring carpet showing in the open spaces. "If you will drop me at the Taft," said Ames, "I will put on a clean collar and invite myself to dine with you."

"We have a room ready for you at the house," the doctor announced.

"Thank you, no," Ames replied. "I have a little dictating to do—my tenant has left and in a couple of days I want my house opened up. I mean to settle down and run an establishment—mostly a workshop," he added.

"Please yourself, Paul, you know you are most welcome," the doctor said in yielding,

"but be sure not to be late for dinner, for we are on tip-toe to hear your story."

"I will gladly be there. Somehow I believe the report will interest you," and Ames smiled with anticipation. A hundred times he had looked forward to this day, to the great occasion when he could tell all to his former teacher, and variously pictured the manner in which the news would be received.

Having telephoned from New York to have his car put into commission, it was ready and waiting but it took some time for the hotel porter to exhume his suit-case, checked there over two years before and, even with a makeshift pressing of his dinner-clothes, the wearer was compelled to offer the apology of a belated guest.

"Well, well, my boy, you must be hungry; you look it!"

"Yes, I am both late and hungry," admitted Ames. "I shall implore Mrs. Worthington to pardon my bad manners."

"I don't mean it that way, Paul. I referred to the importance of filling out your clothes—you are thinner," the doctor explained.

Two other guests, strangers to Ames, tended to keep the table conversation an open forum of

general topics and the natural comments inspired by the presence of a traveler returned from unfamiliar lands.

It was not until the doctor and Ames were in executive session with their cigars in the library that the former asked, "See Herancourt in New York?"

"Yes, I was with him just before coming out here."

The doctor waited expectantly, so Ames told him briefly of the prospective deal with which his unexpected return had interfered, and explained that Eric had at first felt some resentment at the abrupt termination of the affair, but that everything was now all right between them.

"I'm rather sorry Eric is to remain in New York."

The doctor eyed him curiously for a moment before speaking. "Well, Ames, it is not for me to meddle, but it is wise to be a little careful these days. He has changed in some respects; even since the last time some months ago when he spent a few days here. Sarah scoffs at the idea, but you know how women are! Now tell me about your work. I know your Colorado venture was a great success. Did you find any-

thing worth while in South America or Sumatra?"

"Yes, I did. In both places."

"Good! Radium?"

"No."

"What then?"

"Nilgrav."

"Nilgrav? What's that?"

"I don't know—quite. It's metal."

"Never heard of it."

"Nor I, Doctor. I think it is a new find."

"You mean you named it?"

"Yes, sir, or tried to."

"Nilgrav," repeated the doctor, "is that descriptive?"

"Yes, it was designed to mean 'without weight'."

"So I inferred. Rather misleading, is n't it?"

"No, it is accurately descriptive," said Ames struggling to suppress elation. He was having the time of his life.

"I'm afraid one of us is off the track, Paul," said his friend with a tinge of impatience. "Weight is relative—lead heavy and aluminum light. How light is this newly found metal?"

"So light, dear friend, that if I take a mass

of it and place it anywhere in this room—in midair—it would remain there as fixed as though it were on that shelf,” and Ames paused to let that sink in. Oh, it was rare joy—the dear old Prof! Then, in a more serious tone he admitted, “It is hard to believe.”

“It’s *too* hard to believe,” asserted the doctor; and, in a tone that reminded Ames of the class-room, he concluded. “Now, let’s start over again, you have. . . .”

“Just a moment, Doctor, pardon me please! I fully anticipated all this and I’d be guilty of a mean joke to keep you longer in the dark. What would you regard as proof of my extravagant statement?”

Dr. Worthington rubbed one bushy eyebrow with the knuckle of a forefinger and was silent for almost a minute, then said, “Ames, I would never call upon you to prove the sincerity of any statement you might make, but proof of the *substance* of your statement is, of course, impossible.”

Ames arose from his chair. “Wait a moment,” he said, “we’ll see about that,” and going into the hall to his overcoat, took a small box from a pocket and returned, tremulously facing his friend.

"Dr. Worthington, I have waited several moons for this privilege, the great privilege of bringing a strange manifestation to a dealer in staple phenomena; I might say, for the satisfaction of giving a lesson to my esteemed teacher in the possibility of the impossible."

The professor was giving his "teacher" undivided attention, there could be no doubt about that.

"Now watch me closely, Dr. Worthington, the hand oft deceives the eye, as the magicians say. I have here a small box, you cannot see inside it. I place it in your hand; it is so light you conclude it is empty, but we shall look into it. You will observe that it is filled with a cube of something that looks like lead. Surprise number one!

"It is *not* lead, it is *Nilgrav*. Nilgrav, the weightless; Nilgrav, the mysterious.

"I remove it from the box and, still retaining it in my possession, I permit you to touch it, tap it in order to satisfy yourself that it is solid matter. Now, then," and here Ames rested, to allow the mordant to etch the first outlines upon the pupil's impression plate.

The doctor had discarded his cigar. His eyes followed every movement of the demon-

strator and his brow was furrowed in perplexity.

The moment had arrived. Ames's heart beat double time as his recitation was resumed with unsteady voice. "Dr. Worthington, I went through the same mental disturbance that you are experiencing now, but adjustment came naturally enough and the experience did me good. It will be the same with you when you recover from the first shock. Now here is the second shock. Your eyes are about to witness a phenomenon manifested for the first time in the Western Hemisphere."

He took the cube of Nilgrav, placed it upon a table, allowed it to rest there a moment, then slowly pushed it off the edge with the point of a pencil.

The metal moved several inches from its former support, then stopped on the exact level of the table-top, held in mid-air suspension.

Both of Dr. Worthington's hands gripped the arms of his chair, his head thrust forward, eyes fixed in a hard stare; though the lips were open, not a sound escaped them.

Ames, using nothing but the pencil, moved the obedient cube to right and left, and up and down—obedient to man but not to the gravita-

tional force that governs man. Then he reached out, and grasping it in his fingers, deposited it on the back of the doctor's hand, where it remained.

"Does the proof prove?" he asked and at the same time offered a fresh cigar.

At that the professor drew a long sigh, moistened his lips and almost inaudibly asked, "You would n't trick me, even in a joke, eh, Paul?"

Ames felt hurt. "No, no, dear old friend. This is true and being truth should not upset us. All we have to do is to understand it, or do our part in beginning to understand it—that was father's conviction." The doctor nodded, expectantly, and Ames continued:

"You and I will work at this together; my house will be the workshop. I have wired for Ephraim to come here to help us. I will tell you about Eph, he's worth knowing," and continuing in this manner, Ames soon diffused the force of the shock—a shock that in destroying the doctor's concept of an immutable law, had momentarily stunned all reasoning faculties.

Dr. Worthington soon began a close scrutiny of the cube of Nilgrav under a lens, pushed the cube around in the air and with each new test his interest intensified.

The entrance of his wife and Sarah broke up the session between the professor and Ames, but not between the professor and Nilgrav. Murmuring something about to-morrow's recitations he excused himself and went to his study—he and the object of his complete absorption.

"What have you given Daddy that has so absolutely hypnotized him?" Sarah asked.

"A souvenir of my pilgrimage," Ames informed her.

"Really? What?"

"A morsel of metal."

"Oh," her tone implied disappointment.

Ames changed the subject. "Let us, you and your mother and me, embark in my long neglected car and spin awhile. It's a lovely night."

"Either mother or I will have to stay with our guests," Sarah decreed. "Mother, do I have to go with this man?"

"I suspect you will," was the smiling decision, "prodigals must be pampered, I suppose. Run along, don't drive too fast, nor stay out too late."

Now with the motor humming over the familiar road and Sarah in the seat beside him, it scarcely seemed possible that two years had gone by.

He felt like one who had dreamed and awakened ten years older.

How much had he changed? And Sarah? He must know his status, yet it would be wise to proceed with caution.

Twice a vagrant hand stole over and patted a decorously gloved one in her lap, a hand that retreated slightly, yet did not resist.

"Care to tell me anything about Eric?"

"You have just seen him," she replied. "Do you find him changed more than you expected? He is a trifle fatter and a lot more nervous, but he has had to carry all the responsibility for both of you—you bad deserter!" and she smiled at him mischievously. "Why did n't you ever write us while you were away? Not one line!"

"I should have written, I suppose," admitted Ames. "At times I wanted to, but . . ." and he remembered his resolution when he started upon the journey, "you see, I had n't *arrived*, had n't accomplished what I went for, and when I finally did run into something—well, I came back myself as soon as a letter would have reached you."

"If the coming will affect me as it has Father, I guess I'd better equip with bumpers," Sarah laughed, with a trace of nervousness.

"It won't, I'm sure," answered Ames teasingly. "You see, you're only a girl-child and not interested in serious things. But tell me, has any fellow bobbed up on the horizon, that—ah—interests you as much as, well—you know!" he concluded lamely.

Through his elbow which was against her arm Ames knew that the girl had sunk further down in the bucket seat. She said nothing, but Ames sensed that her answer was an unspoken "yes."

The car sped on—a mile perhaps. He was rather miserably conscious that he and Eric had bobbed up almost simultaneously, but with Eric a nose in advance. Could it be possible that Eric had won?

He must find out. "A new chap?"

No answer. He slowed down the car and tried to look into her eyes, but she made it too difficult. Those soft brown eyes could guard a secret, even against sudden attack. Then Sarah did the unexpected. She had removed her glove and, placing a vibrant finger across his lips, she begged:

"Please, Paul, just let me rest happy to-night. Don't spoil all this lovely moonlight with unanswerable questions. I'm truly glad you are

here again! Indeed I am—but I wish you had come before.”

And with this he had to be content. Reassuring, perhaps, but for whom?

So this busy first day of his return began and ended with questions not quite answered.

CHAPTER VII

SEVERAL days were spent by Ames in getting his house in order, and also in communion with members of the Worthington family, in which the doctor's claims upon Ames disturbed enormously that young man's parleys with the daughter.

The doctor must know every detail of his pupil's explorations and every incident associated with the finding of the correlated mineral elements. He had been patiently, almost prayerfully groping through a maze of mental confusion and was beginning to believe that just around the next turn to the right or left he could see the corner posts of egress into the open field of understanding—foggy perhaps, but mistily outlined, at least.

Two rooms of the old-fashioned home bequeathed Ames by his father were stripped of their furnishings and replaced by the laboratory apparatus and mechanical accessories needed in his research and experimental work and, in less than a week, Ames was immersed to his eyes

in the most fascinating labors that ever engaged him.

Just at this time, Sarah went to New York for a few days' visit with a former classmate. Ames missed her companionship keenly, in spite of his absorption in the engrossing experiments, and consoled himself with the thought that, after all, it was just "for a few days." A few days, or for that matter, a few hours, may be epoch-making!

Dr. Worthington's allotment of the work had been the book phases of the investigations, familiar as he was with the literature of mineralogy and physics and having more conveniently at his command the means for digging up citations, references and authorities. It would be difficult to tell whether such were more helpful in a negative way or positive because the new matter was strange to all catalogs of matter or records of reactions.

The large mass of Nilgrav was allowed to remain in the keeping of the safety deposit company, because the small cube was elementally identical with it, yet Ames conducted his experiments with the fragment as sparingly as though it were all that he possessed. For aught that he knew to the contrary his stock of

the strange metal or amalgam was all that the world contained.

Eph Thorp had now arrived and was engaged in the work with the thoroughness that was native to him. His tactful adaptability hid the fact that hitherto Omaha was East to him, and that, since he was eight years old, he had spent only half of one per cent. of his days and nights in wall-enclosed dwellings.

To Dr. Worthington he was an interesting character and although their individualities were in many ways opposite, the two men became great friends from the moment of meeting.

A narrative of Eph's became one of the doctor's newest stories and aided his reputation as a *raconteur*. It concerned the "gosh-awful" plague of mosquitoes that made living almost intolerable around Guayaquil.

A former citizen of Glasgow, who for some good or bad reason was doing penance in Quito, was informing a tenderfoot how strangers told the time of day in the lowlands. Told the time by mosquitoes!

"You take a long pole and poke straight up in the air, turning it around like you would stir your coffee, only much faster; after a while

this bores a funnel-shaped hole in the thick thatch of mosquitoes, and some light comes through. Then you look at your watch!"

Dr. Worthington's first analysis of the strange amalgam of metals, showed Nilgrav to be a remarkable composite. There were elements that seemed chemically related to molybdenum and which turned out to be traces of impure vanadate of uranium and potash, but the bulk of the mass was similar to galena and zinc with traces of vanadinite crystals.

"I find nowhere in the realms of the three physical kingdoms anything that we could classify as this so-called Nilgrav in properties," the doctor reported. "Nilgrav may be only a negligible element in the mass, not yet isolated, or it may not be true metal—might be an oxide."

The first research work in the laboratory proceeded along the line of energy absorption, following up the hint offered in Sumatra when the ingot became charged with electricity during the storm and exhibited super-qualifications for storage battery purposes.

A careful record was kept of all experiments and results, not only during the several weeks of preliminary and intensive operations, but

throughout the many months of progressive revelation.

A series of elaborate tests showed that the ingot of Nilgrav exerted a strong pulling force in the direction of the nearest electrified body until itself charged with energy, when a new influence was in effect.

The first big lesson learned in the unfolding acquaintance with Nilgrav was one of the most astounding of an impressive series.

The substance absorbed electrical energy, like desert sands soak up water. There seemed no limit to its retention of energy.

Ames began by clamping the ingot on a glass plate and giving it an hour's charging with a small generator, taking care to locate the ingot midway between the terminals and far enough distant from them to prevent spark jumping. This method of charging had also been suggested by the chance experience in Sumatra.

His first attempt to test for amperage was without result and led Ames to fear that his proposed system of charging would prove unsuccessful, but unwilling to risk losing the entire ingot by disintegration from overcharge, he proceeded to cut from it a fragment to test its maximum storage capacity.

This operation bestowed a key to the ante-room in a house of wonders.

Although this small piece was cut completely through, Ames was unable to detach it. It was severed but not separated—adhered as closely as before the cutting and not until he had applied strong force by mechanical means was he able to isolate the smaller portion from the body of the ingot, and in the instant of separation there was a heavy spark of discharge.

Following this, Ames learned by stages that the ingot had not only absorbed energy but that energy was manifested in the strong attractions of the detached portions for each other; that the relative attraction of each portion was in the exact proportion of their respective masses, that is, reducible to six hundred pounds, one-sixth of its bulk or mass would exert a pull of one hundred pounds, and the larger portion five hundred pounds.

Inability to weigh Nilgrav made it impossible to divide any mass into exactly equal parts, so in practice there was always a major and a minor element.

Another rule soon learned was that when both portions were unconfined, the major one would remain stationary while the minor would

become movable and obedient to the controlling major mass; but if the minor body were restrained or confined the major would then move under the impulsion if it were unrestrained.

The impact of union under the spell of that attraction would be forceful in ratio to the energy stored within the metal itself, and it was conceivable that the junction might be sufficiently violent to destroy both elements.

In the same series of experiments Ames also learned that upon contact of two charged elements of Nilgrav, both were instantaneously de-energized, rendered inert, while still retaining the property of weightlessness.

A little later Ames discovered that distance between the two charged portions made no measurable difference in the power of attraction. One of the elements would travel to the other as unerringly and rapidly when separated by a mile as by a yard, the velocity varying with the energy charge.

But the most important and remarkable law that was revealed was the joint discovery of Ames and Dr. Worthington, which was named by the latter as "the contingent dominance of the minor element," in accordance with which successive divisions from a main mass became

“two element” systems of their own, as soon as they themselves became major masses by progressive divisions of themselves.

For instance, if a cubic inch from the big mass of Nilgrav were detached after that dominant mass had been stored with energy, that cubic inch segment would be attracted to the larger mass and be under its control, so long as that cubic inch segment remained whole and undivided.

But if that cubic inch segment should be divided by cutting from it a quarter or any other fraction of its bulk, the larger fraction of that segment became at once the dominating influence of attraction for its *detached* portion and in effecting that division—that centralizing of a new system, the dominance of the main mass over the cubic inch segment was destroyed.

Thus, while always susceptible of further division, each segment was in dominant control of its own minor separation and invariably two removes or divisions annulled the parent or generic influence.

As Eph expressed it, “Parents have authority until they become grandparents.”

A divisional fragment would work toward its parent base and cease to do so only when it be-

came a parent base by a further division of itself.

To effect "saturation" of energy appeared impossible of accomplishment, the substance Nilgrav, no matter how small the portion experimented with, absorbed and retained all the electrical energy that was delivered to it and after a dozen experiments a morsel the size of a pea was found to actually hold within its small compass an attractive force equal to six horse power, and apparently yearned for more.

But with all of this progress, Ames was continually faced with the problem of practical utilization, had still before him the primary necessity of utility control; the energy was compressed into wonderfully minute containers but how to draw upon it, to practically apply it, was still the problem.

One of his first "motive" experiments was to place one element of charged Nilgrav in a heavy wooden box which was put upon a shelf in his workshop. Then taking the other portion of the Nilgrav, charged at the same time, he carefully imbedded it in a leaden bullet which he took outdoors and released from his hold. As quickly as thought it disappeared through a window pane and was found imbedded in the

side of the box where it had burrowed deep in a faithful effort to reach its correlated element.

"You see, Doctor," Ames complained, "we are up against the same proposition that confronts us with gravity, we are hard against a force working in one direction only. Here it is exerted latterly; in gravity, vertically."

"No, we are further along than that," Dr. Worthington answered, "this force operates in *any* direction, up, down or across."

"Yes, but we cannot reverse it—can't make it reciprocal," Ames lamented. "We have some homing pigeons which fly home and won't fly away from home. These little metal fellows are strong on affinity, that 's sure, but I can't see that we have arrived anywhere. One element dashes for the other, we forcefully separate them and use just as much energy in doing it as they exerted in their get-together act. We have that same thing in a magnet, and its armature, also in other manifestations of nature."

Here Eph cleared his throat and articulated wisdom, "All that is needed now is some mechanical control system; if a pellet of metal can tuck away inside of itself enough power to run

a trolley car it has tremendous possibilities in the world. . . .”

“In addition to its physical anomalies, yes,” the doctor interpolated.

“Exactly,” continued Eph, “but what I am getting at is this; in my none too humble opinion, what it needed is mechanical control and I think it spells insulation to begin with.”

“We have an insulation medium now,” Ames answered, “or at least, it is that in effect—without it I could not separate one piece of Nilgrav from its parent.”

“I was wondering about that the other night,” the doctor exclaimed, “meant to ask you how you did it.”

“Why, yes,” Ames explained, “if it were n’t for that, the piece to be detached would spark-jump on the instant of detachment. I tried mica and lead and a dozen other separating partitions, following after the sawing or the cutting tool but a jump resulted every time. Then I happened to hit upon the idea of making a saw broad enough to perfectly insulate the two portions all the way down, the Nilgrav itself immersed in a non-conducting element.”

“What did you make the saw of?” both asked in concert.

Ames smiled, "Of substance B 17," and then explained what it was.

"All right," Eph delivered himself, "use that for insulation and you will begin your control."

His suggestion was a valuable one as subsequent experiments proved.

By covering either one of the two elements of correlated attraction with a sheet or plating of substance "B 17," or by placing one or the other in a receptacle made of that insulating medium, the attraction force was temporarily annulled and when again uncovered, wholly or in part, the force of attraction became immediately operative.

This primary control was one of the most valuable discoveries during that first month of experiments and made possible many of the significant events in which Nilgrav subsequently figured.

"What sort of explanation can you offer, Dr. Worthington, to account for Nilgrav's tremendous absorption of energy? One who did n't know about it would declare it impossible," asked Ames.

"As to the *impossible*," the doctor commented, "after my introduction to Nilgrav I believe that the one who declares that any phys-

ical phenomenon could be impossible makes of himself his own prison warden and closes his cell door against an approach to facts. We have to learn to change customary things, that's what it amounts to. Imagine what a change in our thinking must have come when we upset the customary conviction that the earth was flat. The new knowledge was n't revolutionary, but evolutionary. If we advance sufficiently in *evolution*, we would never have to confront *revolution*."

"Good phrase that," applauded Ames.

The testimonial was lost upon the professor. He was now enveloped in his subject and oblivious to externals. "We were astounded at the radium revelations, but soon recovered from our thought muddlings. Now we accept calmly the knowledge that radium and uranium constantly, continuously throw off millions of electrons, energy thousands and millions of times greater than was deemed possible—we would have called it impossible before we *knew*. The knowledge had to be forced upon most of us.

"Now radium happens to be something that *gives out* incredible quantities of energy and Nilgrav happens to be something that *takes in* incredible quantities of energy. They are alike

in their contempt for the limitations imposed by customary convictions."

"But they are fundamentally different in the vital particular that radium moves not of its massed self; the movement is confined to its radial projection," Ames urged.

"True enough," the professor agreed, "but that does not affect the broad fact of matter motion whether excited by a force either attractive or repellent—coming or going—in part or in whole. The *direction* of the force flow of matter molecules is secondary to the basic laws of that motion.

"We have here," the doctor's tone again took on the formality of the platform, "an inorganic amalgam integrably susceptible to propulsive impetus, that, erroneously perhaps, might be likened to thigmotactic locomotion, or at——"

"Whoa-o-o. Back up Prof!" Ames boomed.

The professor smiled guiltily, cleared his throat and continued in a different key.

"Where we have to consider the clumsy medium we call matter, we are retarded, handicapped at least, until we unanimously agree that matter is the objectified thought, just as we all agree that the earth is round."

"Thoughts are things, are n't they?" Eph quizzed.

"Yes, and things are thought," the professor challenged.

"Are n't you making metaphysics out of your physics?" Ames reproached.

The professor hesitated. "Paul, I am not prepared to answer the charge of heresy, but I confide to my two friends here that more and more as the days are told off, my atom dwindles to the ion and from the ion to the electron and that it has been pushed off the physical plane to the mental. Do you know the revised definition of a molecule?"

"Not in exact words," Ames acknowledged, "but it practically means a hypothetical nothing in an entity of vacuousness."

"Well, not exactly so put," laughed the professor, "but almost as ambiguous, I confess. I read only to-day that Sir Joseph Thompson of the Cavendish Laboratory, Cambridge, has defined the electron as 'an atom of electricity divorced from matter.' And it is indisputable fact that it is absolutely unknown whether electrons obey the law of gravitation or not."

"I am afraid that I have led you somewhat afield, Doctor. Pardon me, what were you tell-

ing me, a bit ago?" Ames asked, regarding the professor seriously.

"Just this," his old teacher resumed, "I am prepared to accept the reasonableness of a statement which avers that phenomena expressed in terms of matter will some day harmonize with phenomena at present seemingly possible to the *immaterial* only."

"Don't get you, Prof.," Ames injected.

"Same way here," from Eph.

The doctor stopped to rearrange his argument. "I must ask your indulgence with my lack of clarity," he said with droll humility, "but this is a new recitation for me as well as for you, and I apprehend that my thoughts were not arranged with continuity."

"Oh, your continuity is bully," was Ames's rude interruption, "you are traveling all right, the trouble is that we are not quite with you and we want to arrive when you do."

Again the patient teacher resumed, "According to physical science, all things which move do so directly or indirectly by virtue of the energy reaching the earth as radiation in the form of the sun's light and heat. All manifestations of force, vibration, radiation that are transmitted across the ether envelope have a

uniform velocity of a hundred eighty-five thousand miles per second. Light, X-rays, electromagnetic rays—as in the wireless transmission, for instance—travel at a definite velocity of a hundred eighty-five thousand miles per second, so from this we fix a definite and uniform maximum of movement velocity—it is rapid indeed, as the figures indicate.

“Now then, to me it seems very possible—seems very reasonable since my acquaintance with the marvels of radium and the secrets of Nilgrav—that matter can be so thoroughly saturated with energy as to be appreciable in terms of motion as rapid as the passage of light.”

Ames was nodding understandingly.

“You believe, Dr. Worthington,” Eph now asked, “that a piece of Nilgrav could absorb so much electricity that it could move through the air as fast as that many thousand miles a second?”

“I am ready to believe it,” the doctor admitted cautiously, “but of course, it is highly probable that any metallic substance passing through the air at even greatly less velocity would encounter resistance so great that the friction would heat and vaporize it. It would

never reach its destination as a solid body, unless. . . ." Here he paused.

His listeners did not interrupt him this time.

"Unless there entered into the equation the operation of a new law, a new government; always possible, just something more to puzzle out," here the doctor smiled, almost cynically. "When we boast that we uncover a new phenomenon we simply acknowledge thereby that we have hit upon a theory or law that has always existed. It is n't *ours*, it has always floated around in the massed consciousness; we reach out and appropriate it and only have the wisdom to use a unit or two of its application.

"That should warn us not to get excited over events that we cannot reconcile with our preconceived ideas of what are and are not reasonable. We take a blade of a penknife and by the unimportant process of drawing it a few times over a piece of lodestone we invest it with tremendous power. It has the power to attract and lift a needle and do it thousands of times; the aggregate of these liftings amount to many pounds. Is n't it wonderful, is n't it a miracle? Yet we regard it now as commonplace and insignificant.

"In all the catalog of the world's millions

of different matter manifestations there are only about a hundred different kinds of known atoms. We may have added one new variety in the discovery of this extraordinary Nilgrav. Professor Soddy of Oxford recently declared that there is imprisoned in ordinary, common matter vast stores of energy which ignorance alone at the present time prevents us from using for the purposes of life."

"Perhaps we might be able to utilize Nilgrav in a manner that would be of great benefit to the nation," Ames said with wistful earnestness. "It almost seems that an agency for such strange force might be capable of a wonderful service."

"A most drastic one probably," mused the doctor, "when you consider that a pin head of Nilgrav could be charged with many horsepower of destructive force."

The next day Sarah returned from her visit. She seemed a trifle listless, and had very little to relate concerning her amusements while in town.

"Almost everybody is away, and it's too warm to do anything except go motoring," she commented.

They were just finishing dinner, so Ames seized the opportunity to have her to himself.

"You're right, Sarah—by that I mean you're always right—so let's go for a spin."

She shrugged a shoulder, and almost pettishly murmured, "Oh, it's *too* hot!"

Ames laughed at the inconsistency of her excuse, but her mother eyed the girl with concern. "Now, daughter, this ends your trips to town this summer. We can't have you coming back and behaving like an ill-bred child."

Sarah flushed at the little rebuke and made sweet amends.

"All right, Paul Ames! I accept your kind invitation, unless I have too deeply offended your majesty," and she went to prepare for the ride.

Ames and the doctor lighted up for a smoke, and awaited her return. Dr. Worthington puffed for a few seconds—then, with a trace of anxiety, he said:

"I'm glad her mother shuts down on Sarah's going to town any more this summer. Has Sarah told you she saw Eric in New York?"

She had not, and although Ames was clearly disturbed, he promptly rose to her defense. "She has hardly had time yet. You know I

saw her for only a little minute before we went in to dinner."

Dr. Worthington then told him in a manner somewhat hesitant that suspicions against Herancourt were again causing investigation; and that from inside information from Washington it was becoming evident that he was associated with pernicious activities against the Government; that it was believed that he regretted his American registration and citizenship and was not strong enough to bear the consequences, his father's opposition and demands counting for much in activities directed toward the enemies of Hunovia.

"I know that Sarah is ignorant of all this," the doctor continued, "but what makes the matter worse, Paul my boy, is that Eric has tried to implicate you, impossible as it may seem."

Ames was shocked and, now thoroughly aroused, was forced to believe that Eric was not without guile. The conviction came as a great pain and disappointment.

Sarah's entrance cut short the conversation, and together they went out to the waiting car.

They drove in the direction of Waterbury and Sarah, who had regained her customary good spirits, kept Ames amused with gay

stories of minor happenings in town. At last, with a sudden change of tone, she said:

"Paul, I don't pretend to know anything about business affairs, but it seems to me that you have treated Mr. Herancourt abominably. I dined with him in town, and he feels terribly cut at your turning him out of the company."

Paul was genuinely astonished. Sarah sitting in judgment upon him was something new; and at the same time he noted the ceremonious reference to 'Mr. Herancourt'—just what did that mean?

Gathering his scattered wits, he said: "But Sarah, he was never turned out of the company—he told me that he had other plans in New York which would more than require his entire time."

Sarah's only comment was a very unsatisfactory one. "Oh, very well, if you don't wish to discuss it!"

Paul thought quickly—should he tell her about Eric? He decided against it.

"Come now, Sarah, be just—you have started something—you should tell me just what Eric has told you."

But Sarah had finished, and no amount of

persuasion could force her confidence. So they drove back to town almost in silence, the brightness of the moonlight obscured by the shadow of past, and perhaps future events.

CHAPTER VIII

NO more time was to be spent in trying to understand *why* Nilgrav possessed properties peculiar to itself, but short cuts were to be taken toward practical utilization.

The main opportunity opened up by the experimental tests already conducted was along the line of power storage, Ames having proven that a grain of the charged substance could exert sufficient force to lift the iron safe which had been purchased to protect the parent mass, now conveniently housed within it. His method of handling the small morsel was to inclose it in a ball of iron, the two halves of which were screwed into each other, a small cavity having been scooped out in the center for the energized element.

A fifty horsepower Westinghouse dynamo had been in commission and had already delivered and stored within the parent mass of Nilgrav an amount of energy that was estimated to be over sixty thousand horsepower.

But the small motor was limiting operations, and adequate and new plans must be inaugurated.

Never having fully regained his health since his return from Sumatra, Ames's physician suggested that he spend a few months in the Adirondacks, continuing his experiments and at the same time building up his constitution. Eph, being duly commissioned, at once leased a property in a somewhat remote location and with it the water rights of a good stream for a term of five years.

The installation of a modern turbine and a five hundred kilowatt hour generator quickly followed and early in May the "finest little power plant in the world," according to Eph, was in readiness to perform.

The event was made the occasion for a joyous mountain holiday, attended by the Worthingtons, who had motored over from New Haven. To all outward appearances, the friendship between Paul and Sarah was on the same old footing, and Paul was fast learning to ply his suit with greater discretion. By this time the doctor had informed Sarah of the ugly suspicions against Herancourt. She characterized them as absurd, and requested him not to refer

to them again. "If the Government has the case in hand," she recommended, "suppose we allow it to carry on without interference."

"All ready for quantity production now, are n't you?" exclaimed Dr. Worthington, as the little party was shown over the power plant.

"We are more of a canning factory than a manufacturing concern," Ames laughingly replied. "Packing force in a new kind of container."

"No, sir," retorted the doctor, "you are equipped for the extraction of power from 'white coal,' and putting it up in packages. Equipped to change a great water wastage into a great saving, or let's say, to divert the playful gymnastics of tumbling water into useful work."

"A feature of this project that strikes me as inconsistent, is that you get your product by robbing old Daddy Gravitation, then give it into the keeping of something that denies that such a thing as gravity exists," was Sarah's comment.

"Rather a forced concession on the part of each," replied her father. "It is just another one of those combinations of opposites that results in extreme effectiveness; the forces of

attraction and repulsion are made obedient to the same phases of mechanical conversion."

"Now, Sarah," announced Ames, "those water horses that have been romping wild for centuries are ready to start work at your bidding; the harness is ready, and when you touch that button over there the harness will drop and, bit in mouth, the crystal steeds will tug day and night adding unit on unit to the sum of Nilgrav's power."

Sarah was duly impressed by both the speech and the program and, following instructions, she pressed an electric key. Almost at once, the swirling, noisy torrents raced through the pent lock and the whir and hum of the turbine mingled with the high pitched singing of the dynamo brushes. The waters were being shorn of their strength and emerged from the turbine, subdued and exhausted, for all their power had poured into the mass of Nilgrav and lodged there. Energy stored for what ultimate purpose no one could then have guessed.

"That's that," announced Ames. "Now when our engineer is through with me we shall have a few little demonstrations, meanwhile Eph will open the lunch hamper."

In another hour everything was ready for

a short program of field events Ames had arranged for his guests, using the Nilgrav morsel charged with the small dynamo while in New Haven.

Close to the power plant was a pond, or small lake covering about four acres, on the near shore of which had been constructed a rough column of rock and cement. A small flat bottom skiff floated nearby. In the bow of the boat Ames placed a vise, then in a cavity at the top of the rock column he deposited a round object about the size of a marble.

"Now, Doctor, you and Eph get into the boat, and paddle over to the other side, turn the bow towards us, sit well in the stern and wait until something happens. We shall have a demonstration of a ship carrying men and cargo, propelled without visible means of locomotion." The two men did as they were directed.

"Sarah and I will loose the ghostly mules—all you will have to do is to sit still and hold tight," Ames called to them.

"See that little globe in there," said he to Sarah, as they looked into the column. "Inside of it is a tiny speck of charged Nilgrav; in the jaws of the vise in the boat is its correlated

unit. All you need to do is to push down upon the red spot on this globe—don't lift it out or move it. By pushing on that spot you uncover the insulation and the attractive force is put into effect. All ready?"

"Yes," she replied quite breathlessly.

"Steady over there," Ames called across the water, and then to Sarah, "Shoot!"

The girl made a quick nervous dab at the red dot, missed it and then more calmly tried again, this time successfully, and at once her attention was claimed by action on the other shore of the lake. The boat almost leaped from the water, threw the good doctor backward in the mud, and with Eph grasping the gunwales, eyes apop, sped or hurled itself towards the masonry column.

Ames made a quick effort to reinsulate the Nilgrav, but without success.

The first Nilgrav-propelled vessel was dashed to the shore with its bow crushed against the column. Eph escaped injury by a quick and grotesque frog-leap over the column, bringing up on his hands and knees in a clump of sumac. Nothing serious had happened, rather it was humorous and everybody laughed.

"Too much ginger," was Ames's report, as

he and Dr. Worthington went into the powerhouse to put the professor into a suit of jeans while his own clothes dried. "Another thing learned, Doctor," he added. "It's plain we cannot use a rigid column as a stop buffer for heavily charged elements, we must devise an upright post that swings in an arc from the base with spring cushions and recoil to take up the shock."

The next demonstration took the little party two miles from the power plant where an abrupt cliff arose seventy feet from the stream level, its face as sheer and sharply perpendicular as the Hudson palisades. At the base of the cliff a large wicker basket lay half hidden in a fern bank and at that location Ames halted his party.

"Looks as though you had the stage all set," Sarah remarked. "I shall look for the camera man and hear you shouting directions through a megaphone."

"No," Ames answered, "in this scene I'm not the director but the star actor."

"That's just it," grumbled Eph, "this act is a dangerous one and he insists on doing it himself. He thinks he's as husky as Doug

Fairbanks. I wanted to be the prima donna in this, but he won't let me. I think he's jealous."

"I'm not jealous," laughed Ames, "I'm just conscientious about the part in its relation to art. Up the mesa for yours, old timer, you're delaying the curtain."

Still grumpy, Eph made off for an easy detour to the edge of the cliff directly overhead.

Sarah and her father at once divined the significance of the preparations and protested against the act.

"You can demonstrate your proposition without risking your crop," the doctor remonstrated. "You are about to prove an ascent with a heavier than air carrier and without mechanical power, but why not use a rock for passenger?"

"Oh, I've tried this before," Paul assured them, "and I liked it—it was a fine ride. Besides it makes a deeper impression on the audience when live freight is carried," he added.

"Eph, I suppose, is detailed to loose the tie that binds the basket to earth?" the doctor asked.

"Yes, that's Eph's job," and Ames pro-

ceeded to embark in the basket looking carefully to the fastenings of a heavy strand of rope looped across its top with a small metal box attached.

Sarah was scanning the summit of the cliff. "Going over the top, Paul?"

"No," he replied. "If things work out according to rehearsal this little 'flivver' will nestle close to that rock up there and I will come down the way Eph went up and——"

"And if things don't play true to form you will take the short gravity route, I suppose. I think you are taking unnecessary chances, Paul. I don't like the idea!"—and Sarah laid a restraining hand upon his shoulder.

Paul felt a thrill of joy at her solicitude. This was more like the good pal of earlier days, at least.

"All ashore that's going ashore," yelled Eph from the heights. "Ready, Boss?"

"Ready it is," he called. "Girls and college professors back of the lines," and although he hated to do it, he removed Sarah's restraining hand from his shoulder.

Another shout of warning from Eph, then a sudden squeak of woven willow violently wrenched, and the basket, impelled by the new

dynamics, rose, or rather bounded upwards with the impetuosity of a rocket.

The close observer might have seen the rope-loop which Ames was holding about his head suddenly contract and extend. The basket responded at once to the strong upward tug, then placed express elevators in the snail class. Next moment the basket could be seen poised on the edge of the brink, half of its bulk crowded against the rock and the other half hanging perilously tilted.

The doctor's face was strained with anxiety.

Sarah's hands clinched convulsively till her nails bit into the palm—then for a moment she closed her eyes to shut out the terrifying sight. When she looked again, a hand was waving from the cliff top and the voice of the intrepid navigator called out, "Arrived safe and well."

Then they heard the laughter of one man and the scoldings of another. In five minutes more, the reprover and the reprovèd were present in the flesh, one wearing clothing much the worse for numerous rips and rendings.

"Thank the Lord that's over!" exclaimed the doctor.

Sarah was trying with nervously shaking hands to pin up the damaged reefer.

"Safety first?" laughed Ames, taking the pin from her cold fingers.

"It will have to do until needle and thread are available," she answered, at the same time avoiding his eyes. "I 'm vexed with you, Paul—seems to me you have made safety last, in your plans. I almost wish that you had never found that silly Nilgrav."

Paul's heart gave a suffocating throb, and the muscles of his throat tightened. Undisguised concern for his safety! Was there really to be a miracle for him?

The doctor answered Sarah's protest against Nilgrav by saying stoutly, "*I 'm not!* It's the most marvelous discovery of the century and worth tearing clothes over. Many a man would be glad to pay the death penalty for the distinction of finding it. Now, Paul," he continued, "I begin to see a method in the range of your 'demonstrations.' We have had an example of the lateral or horizontal exertion of Nilgrav energy and the *upward* exertion. The downward exertion is not needed, I suppose, because you will call upon our old friend Newton for that."

"No," Ames replied, delighted with the open-

ing made so easy by his teacher, "we shall let Isaac keep his old-fashioned stuff, it 's too slow, and it lacks penetration."

"Penetration?"

"Yes," Ames complained, "one drops something on the ground and there it stays, quits cold, does n't go beyond the surface. Newton's force lacks persistence, too easily discouraged."

Dr. Worthington's eyes twinkled. "Lead us to this new field of exploit. You are giving a good show, Paul."

"About face, back to the power plant!" Ames was as happy as a boy boasting possession of the biggest wart.

Sarah's interest in the elevation tests was still very much alive and on the way to the plant she asked Ames to tell her what the sensation was like.

"The first time I tried it," he confessed, "there was a strong reminder of the puffed wheat advertisement 'shot from guns.' At that take-off I thought I would be strained through the bottom of the hamper, the top of the cliff seemed to fall upon me and I was catapulted out of my cage—well, Eph says thirty feet—I don't know. Was pretty well dazed and

sprained both arms a bit. This time I disposed my weight differently and Eph was the short stop."

"The energy then cannot be practically utilized until you devise some way of—of—moderating it, of making it less rough?" she asked.

"Rough and tough, that 's about it," he admitted, "but we shall find some way to control the critter. You see it is the offspring of wild ungoverned parents, a drop of the essence of power. Until we know enough to dilute and apply it, we 're to blame, not it!"

As the sculptor beholds a quickened identity in his marble concept, so was the man Ames personifying the genie of power that dwelt in the tenements of his Nilgrav.

Arriving at the plant lot Ames led his party to a spot marked by a stake. "The engineer and his helper spent four hard hours in digging a hole twelve feet deep," he announced, pointing to the stake. "At the bottom a little grain of charged Nilgrav was placed under a plate of boiler iron, then the hole was filled in and tamped down. Now the correlated element of that grain is in the center of this sledge hammer. The steel tape line that is fastened to it will plainly tell how far into the earth the ham-

mer head will penetrate. I don't know, because this test is a new one."

"The test is a severe one," remarked Dr. Worthington, "it will require tremendous force for the sledge to jam its way down more than a dozen inches. How much force have you stored in these two units?"

"About seven times more force than was used in the elevation test, but I have n't measured it carefully. We'll try it," and Ames removed the stake from the ground and laid the sledge head in the same place. A steel metal pin extended from the upper flat side of the hammer head, the steel tape fastened through the handle hole.

He then gave the pin a sharp blow with another hammer. Immediately the six pounds of iron disappeared into the earth, the tape following, rapidly at first and then gradually slowing until five feet had been measured off, at which point the movement was hardly noticeable.

"Ha, ha!" exulted Eph. "That's the first time we ever made it work slowly. Good lesson in moderation."

"That's interesting," said Dr. Worthington. "Resistance slows it up, that's certain."

Ames was on his hands and knees closely watching the tape. "It is still moving," he answered and as he spoke the steel ribbon quickly sank another foot and slowed again. "Soft spot there, perhaps. Going—going—slowing—seven down and five to go," he laughed. "It's our game, Doctor."

They watched the tape for another fifteen minutes, but it made less than five inches in that interval and, the mountain air being chilly, all went into the power house to warm up and talk over the demonstration.

"Going to commercialize your find, Paul?" the doctor queried drowsily, converting mouthfuls of smoke into quivering rings.

"Not at once," Ames replied, wrecking two of those rings as they came his way. "Not in shape yet by any means. I wanted to keep Nilgrav in the background until things were better worked out, but there was one witness—maybe more—to the first outdoor performance here and you know what curiosity does. I'm sorry it happened so."

"Cause any excitement?" the doctor asked.

"Not so far as I know, but the natives hereabouts don't favor innovations and they are bent on gossip."

"Why don't you throw them off the scent?" suggested Sarah astutely, "divert them by misleading propaganda."

"You're right," Ames said, "we could use some kind of drab camouflage, something incidental or conventional; might persuade Eph to make a few spark plugs, or an elevator buffer—something or other for a while and peddle a few."

Here Mrs. Worthington, diffident and quiet, made bold to "speak in meetin'." "When you used the golf terms, 'seven down and five to go,' Paul, a little while ago I had a mischievous thought."

"Mother! fie for shame!" cried Sarah, folding her hands puritanically across her chest in mock protest.

Mrs. Worthington was steeped in the silence of abashment.

"Tell the gentleman, Mater dear," and Sarah kissed the splendid forehead.

"I don't know much about golf and less about Nilgrav, but what a trick it would be to play Nilgrav golf balls," and she smiled at the thought.

"Magnificent!" Ames exclaimed. "Forget the spark plugs, Eph, and make it Nilgrav golf

balls. Affinity Brand; drives, approaches and putts all guaranteed."

"That's a comedy theme sure enough. Under such circumstances I might win from Gene Sarazen." The doctor's imagination was stimulated.

"There's a barrel of fun in that project and maybe we will tap it some day," declared Ames. "Let's go out and look at the tape."

"Market falling," he called after examination, "eleven inches in the last hour, present quotation nine and a half feet below par."

Eph had remained behind in order to superintend preparations for tea, so the party of four, with Sarah's parents well in advance, took a circuitous route back to the power house.

The late afternoon sunshine filtered through the tree-tops, and Sarah and Ames stopped to catch its last glimpse as it was reflected on the waters of a pool. They were very quiet—an unusual atmosphere of soul communion enveloped them, making everything else seem remote—all misunderstandings passed from their consciousness.

Ames was the first to break the silence. "Sarah, sweetheart, will you tell me something now that I have waited so long to ask?"

Slowly she lifted her eyes to his, and in them he read the answer to his unspoken question.

He clasped her in his arms, and with the benediction of the sunset upon their heads, her lips were pressed to his in love's sweet surrender.

Late that night Ames motored his guests to Ticonderoga; and examining the steel ribbon on his return found the head of the sledge hammer had forced its way completely through the twelve feet and was consequently firmly attached to the under element. The next day both elements were recovered, but all attempts to withdraw the plate of boiler iron tightly pinched between the two proved fruitless until means were devised to reinsulate one of the elements.

The method of charging having developed no faults Ames at once set about the task of utilizing all the available water power at his disposal and rushed orders for extra turbines and generators so that the mass of Nilgrav would be fed all the energy that could be generated with the available water power. By this means the potential value of the smallest atom of the rare substance would be immensely increased.

A little cottage was also built, combining living quarters, office and laboratory.

The enterprise was now assuming real proportions. Eph, usually unworried, took occasion to caution Ames against the continued calls for equipment funds and the growing pay roll. He believed in the venture, but was for commercial prudence.

"If we were making and selling clocks, socks or wooden buckets, it would be more like a business, but you see it is all experiment and expense. Had n't you better slow down until some money comes in?"

"Not a slow!" Ames declared. "You and I both know that the experimental era is past, at least so far as Nilgrav's storage appetite is concerned, and while it is feeding and gaining strength at the rate of twenty-five hundred kilowatts or thirty-seven hundred and fifty horsepower every hour, we will calmly busy ourselves figuring out how to direct it. You cannot hurry the sales department, Eph. One of my father's articles of faith was that in such matters hurry made the guests eat dough."

"Well, we've been in no hurry and this model little power plant is eating up the dough, all right, all right," grumbled Eph.

Ames smiled comfortingly. "As to the money side, the investment angle, Eph, I am just beginning to realize that our lump of Nilgrav might easily be worth a million dollars, ten million dollars, perhaps a hundred million. When you remember that we own all the Nilgrav in the possession of man and know, as we do, its tremendous possibilities—that a grain of supercharged Nilgrav has power to run a battleship, or bore a hole entirely through a planet—who can estimate the commercial value of that mass over there? Money would be no measure of its value whatever. Two bushels of diamonds sell for many millions and two bushels are mined every month. There are about two bushels of owned Nilgrav in the whole world—look at it—it is over there lapping up power like our planet drinks sunlight."

Eph was convinced.

"But it is n't the money that is wanted; great wealth does n't have any lure for me, Eph, but I have the conviction that there is a future for that substance that—well—that money would defile."

But even before the installation of the new machinery, community interest had been aroused to a pitch of high excitement and it

became necessary to institute measures of seclusion and protection.

This was measurably assured by wire fences and a watchman, but measures that are designed to forestall things that might happen cannot forestall things that have already happened. That was the phrasing that Eph used anyhow.

It was a long way from Ames's desire to gain any publicity in his present activities; in truth the executive policy was directed along lines that forbade the left hand much information about the right hand's doings. But some of the uncommon outdoor tests had been witnessed by eyes that observed without understanding and exaggerated gossip was soon set afoot.

A considerable quantity of beans was spilled by a zealous reporter of the New York "Saffron," who after spending his vacation in the vicinity of the plant and imbibing the local rumors, made a "story" of them, seasoned with plenty of local color; he then considerately mailed Ames six copies, five of which he probably thought Ames would like to send to interested friends. The irony of this inference was for Ames the chief element of its humor but was none the less disturbing.

"Hear this and weep," he called to Eph, and this is what Eph heard:

. . . The power house was originally equipped with a single turbine and a generator of special construction, but later, both power house and machinery were added to, until the present capacity of four times the original unit was reached.

From the very start of things, there had been an absence of signs bidding the visitor welcome, and later, strangers felt constrained to interpret the erection of a high ten-strand barbed wire fence as a hint of inhospitality, particularly as that fence was zealously attended by a more than less uncivil engineer.

Only four engineers and mechanics and a negro helper are employed about the plant and all have learned taciturnity. Once when the tax assessor called, and ventured to ask the chief engineer what the plant was doing, he got for reply, "Running." Questioned closer, he was told that nobody but Mr. Ames, and possibly Mr. Thorp, knew the purpose of the project.

That there was an intelligent motive in the background somewhere none of the local citizens doubted, but that strange things happened betimes they knew to a certainty. The story is going around that Brutus, a negro employed at the plant, had made a practice of absenting himself at intervals of every few days, stealing away to drink gin and shake dice at a Freedman's camp ground, not far distant.

He had been repeatedly rebuked for these defections and finally warned that another breach of discipline would be visited by a form of correction at once summary and impressive.

One afternoon after Brutus had been A W O L for about an hour, the man Ames was seen by an interested passerby to place a piece of some strange substance in

the top of a cement post, just outside the cottage, and then perfunctorily press a brass rod.

In about eight minutes, confused sounds were heard—crackling brush and inarticulate human utterances, then there hove in sight, a scared, scarred negro whose method of travel was at various times on foot, back and belly, depending upon the sort of obstacles encountered in his progress.

Another touch of the brass rod upon his arrival at the post terminated the agony of involuntary propulsion.

Eph grinned, "Pretty close to facts, Boss. They're getting on to us."

From that date all outdoor work was conducted, as far as possible, under cover of darkness, particularly the continuation of those experiments to determine the angle and speed of Nilgrav elements traversing the air, not only when inclosed in enveloping containers, but without them.

These tests had to be carefully planned for they were not free from dangerous contingencies, but before they were concluded Ames had been able to compute a table of "velocity to charge" ratio and the angles of passage.

The movable element showed no measurable gravitational deflection over the longest paths through the air that had been practicable to try out and it always traveled over the shortest

course, unless stopped by obstacles offering greater resistance than the attractive force exerted.

Thus, if the fixed element were located at a point one hundred feet above the movable element at the moment of release, and the movable element were one thousand feet away, its travel path would be inclined ten per cent. and, if both elements were placed at the same elevation or depression, the travel path would be absolutely level.

So, if one element even though moderately charged, traversed a path near the earth's surface it would more than likely injure or kill any man or beast that chanced to be in its path.

Little wonder that Ames became a marked man and the power plant the Mecca of the curious; motorists, campers, itinerant art students, as well as the all-year inhabitants, daily peered through the excluding fence and pestered the watchman with questions. Facts mated with fiction and multiplied apace.

To the casual visitor in the vicinity there was little to excite interest, but to the district citizen, the dyed-in-the-wool Adirondacker with his traditions and prejudices, this mysterious

establishment in the woods and the machinations of the man who occupied it were an incitement to fidgets and suspicion.

It was at this period that three chilled men crouched in the blackness of a thicket, watching with nerves racked from the tension of prolonged expectance and strained alertness. Their faces were turned toward the Ames plant fifty rods away.

"I 'm cold and dog tired," whispered one of the trio. "Let 's give it up for to-night. My wrist watch shows eleven o'clock and after."

The silence that followed might have implied assent, but nobody moved.

Some minutes passed; the hum and whine of turbine and generator held the air aquiver, at times in torpid droning, and again with cadence disturbed by each vagrant breeze.

One of the men started to massage a cramped leg when what they waited for transpired—approached, passed and was gone—before it was fully sensed.

Across the abyss of darkness a filament of dully luminous green had stretched before the vision of the men for a fraction of a second, and, overlapping the sight impression was one

of sound—a little pull of petulance raised to questioning inflection.

“That ’s it! That ’s what I meant,” came in hoarse undertones from one of the watchers, as all three struggled to their feet and peered intently through the darkness toward the cottage on the power plant grounds. The glow of the slender thread had extended through the low branches of the trees to the southward and though it might have started at China, it certainly terminated at the cottage.

The men drew near for surer evidence. What they saw was an opening door, then a man silhouetted in a deluge of light, saw him emerge, approach a heavy column or pillar close by, pause there a moment and re-enter the room he had left. Though that room was almost burning with illumination, not a ray leaked through the blinded windows.

A half-hearted suggestion to make a closer inspection met with disfavor, for the throats of big dogs now sounded a challenge to all things hidden in the blanket of darkness.

“Before we leave,” recommended Dr. Blake-man, “we can make sure it was n’t a wire.”

This knowledge was easy to establish. One of the men carried a cane and the others used

branches cut from neighboring trees. After a dozen places had been swept along the course marked by the luminous span without encountering anything as material as a wire or thread, the conclusion was reached that whatever might be the nature of the phenomenon, it traveled along a trackless way.

"Like a radio-telegram," ventured Dr. Blakeman.

"But it *is n't* a current of electricity," insisted Milt Harris. "It's something solid—something that has substance and penetrating power. To-morrow in the daylight I could show you where it has barked several trees and drilled through a small sapling like a rifle ball."

"Maybe it was," yawned Dr. Blakeman.

"No, it *was n't*," Harris protested. "That's impossible. I have seen and heard the thing ten miles from here, so has Mr. Fear—always headed for that cottage—the same sound and at night the same greenish hue. The one to-night was a small one, had less brilliance and sound." He paused a moment and then continued, "Once I was fishing on the lake near your place, Dr. Blakeman, and the thing must have passed over my head. I heard the sing of it although I saw no luminosity because the

sun was shining, but I heard it cut through the leaves and it brought down a bit of bark from the tree I was under."

"You say the man's name is Ames?" Dr. Blakeman asked.

"Yes, Paul Ames. Some sort of scientist, so I hear, and he has that big power plant over there, turbines and generators and the Lord only knows what else and nothing is produced."

"It is certainly interesting, as most mysterious things are," was Doctor Blakeman's reply, "but I can't see any reason for interference measures; he may be working out a problem of wireless power transmission."

"That's all right enough," retorted Harris with asperity, "but it's dangerous business; a thing that has the ugly power to go through a tree could go through the lungs and heart of a man and kill him. It's a menace to the safety of our summer colony."

The third man, Constant Fear, contributed nothing. He was characteristically sparing of words. His job was guiding, and he knew that job. So he silently took the lead and the three men started homeward, threading their way Indian file in a narrow trail to the main road, their backs toward the abode of the suspect.

Suddenly they became aware of another phenomenon.

A cold, phosphorescent greenish glow again radiated off to one side just for an instant, as from a tropical firefly, but this time with a louder sound—a vicious hiss, and then a sharp scream of agony and fright.

The men stopped transfixed, speechless. The scream was at once followed by three hideous cries—falsetto, breaking into choking bass, ending in moans.

Then stillness, save the low whining of a hound.

A minute passed; a long minute. The men remained motionless, faces bloodless and dewy cold with wide-awake nightmare, close seized by the spell of the supernatural and the presence of death.

Turning at a new sound from the plant they saw the cottage door open. A man emerged; another from outside entered the zone of light and both stopped at the base of the column. They were quietly talking, but what was said was unheard by the three observers.

The man who came out of the cottage again entered it, but before closing the door spoke to the other in a voice which, though well within

the conversational range, was resonant and deep, carrying plainly to the men in the foot-path.

"Poor Bildad. Dead as the Dodo. Tell Brutus to bury him decently."

That order broke the spell and relaxed the rigid muscles of the night watchers. Dr. Blakeman was the first to recover his powers of speech; breathless somewhat, but intelligible.

"Good Lord, what a shock! My nerves are all shot to pieces!"

"Thank God, it *was n't* a human," exclaimed Harris. Then with apprehension, "It *was* an animal, was n't it? I'm having a head quake."

"Yes, surely," confirmed Dr. Blakeman, "a large dog."

"*This* time it was, no doubt," agreed Harris, quick to follow up his opportunity. "But next time it may be one of us. I don't relish the idea of being in the way when those Ames bombs are coming home to roost. Let's hurry on."

They hurried on. Arriving home, two of the vigilantes fortified themselves for sleep, tarried late abed and made their report at the fishing club the next day at noon.

The guide, however, he who bore the name of Fear, made a separate report.

Being a son of old Absolam Fear and his wife Prudence, he was a "dependable cuss," according to local rating; industrious, cautious and with leanings to piousness; prided himself upon these virtues and exacted them from others.

His father, at the christening, labeled the little parcel "Constant," in disregard of obvious possibilities in the mouths of scoffers.

Constant Fear became a guide and a good one. He knew every acre of the domain from Plattsburg to Rouse's Point, was a canny hunter, good cook and minded his own business.

One phase of Fear's make-up was an almost African awe of things mysterious. Any phenomena not readily explained by familiar usage were more than likely to be classified by him as belonging to the supernatural and, as such, unknowable and ominous. Spooks were as real to his consciousness as pork chops, each having qualities of appeal peculiar to their ordination. Hence, believing as he did, many signs followed.

Thus, naturally enough, when his paths through the woods were several times crossed by mysterious missiles to and from the power plant, the mental turbulence that surged within him finally burst the bonds of his established reticence.

The day following his observations in company with Doctor Blakeman and Milt Harris, Constant Fear came into town for mail and the traps repaired by Steve Wightman, the marshal. The two men held converse at the curb and were joined by other citizens attracted by the pregnant import of Fear's volubility.

The topic was the man Ames and his doings, or at least he who had been currently known as Ames—until this day, when his designation was changed to a more picturesque cognomen.

The story produced the expected thrill and, during its recital, two large crescents were bitten by Constant from a half-pound umber colored plug; one of the crescents being according to regulation interval; the other, as a stimulant to unwonted loquacity.

"And how do you account for such things?" asked Steve Wightman.

Fear's words came slowly and with husky impressiveness. "That fellow is a bad one. Nobody could do the things he does and be an agent of the Lord."

"They do say he's agreeable enough," commented the post-master.

"That's true enough and that's what makes him dangerous, but in my opinion"—and here

the words were not tonal, they were breathings
—“*that man Ames is the Earl of Hell.*”

The euphony of the title proved appealing and lent itself as a scare caption to the expanding gossip.

CHAPTER IX

PAUL AMES'S more or less routine program these days was to be away from the plant two days of each week, spending Saturdays in New York and Sundays with Sarah in New Haven.

When in New York he was required to keep the weekly examination appointment with his physician and generally managed to spend a few hours at the Yale Club, where he was pretty certain to meet a number of his classmates.

All of his friends had read or heard about the "Saffron" write-up, and the nickname bestowed upon him by Constant Fear. It had filtered through to New York and was well on its way to the Pacific Coast and to Europe.

On this particular October day Ames was glad to enter the rendezvous of Eli's sons for he had had a hard week of it at the plant.

During that week he had worked out an ambitious utilization plan for Nilgrav, that he felt confident would place the United States army

and navy in an invulnerable position in the event of war with any foreign power. The basic idea had come to him in the early stages of industrial experimentation and was developed as the avenue of greatest public benefit.

Hence he felt well warranted in indulging a craving for diversion.

A quartette of domino players loudly greeted him. "Hail to the Earl of Hell! Greetings, old cheese, draw up and tell us all the scandal."

"Hello fellows, glad to see you. No need to tell you any scandal. You *read* it," Ames bandied.

"Just what's the game, Paul? Your reading notices were good. When will the display ads begin? What is it—near-beer, corsets or a new religious sect?"

Ames raised a deprecating hand and in his characteristically direct manner disposed of his inquisitors without evasion or equivocation. "No, none of those. I'm just experimenting with a new metal and until I know just what can be done with it, I'd rather not do any talking. Let's go in and chow."

The chow quartette soon became a sextette, the little "Dotted Swiss" and his partner entering as the lunch started. "I see we have no-

bility with us to-day! Salutations, Earl! Anybody ordering wine?"

"I have extreme satisfaction in being able to quote gospel protest against the Eighteenth Amendment," said Duff Morgan. "Ames's man, Eph Thorp, a Scripture fan, gave it to me. Isaiah, twenty-four, verse eleven, 'There is a crying for wine in the streets! All joy is darkened, the mirth of the land is gone.'"

"New stuff, as applied, but not so good at that," yawned Somers. "It suggests a news item, not the Scripture part of it, but the wine. I saw Eric Herancourt this morning."

This was news indeed and called forth a babel of questions.

"*Not* sober," Somers testified, "not sober, but he seemed prosperous, sufficiently fat and very foreign. Looked sorter mean to me."

"Say where he had been lately?" asked Ames.

"No," answered Somers, "I asked him and he squinted his eyes and informed me it was none of my damned business. Not that he *said* anything, but just curled his upper lip into a sneer and smiled insultingly. I refrained from obloquy, my well governed manners forbade. The only fellow he asked about was you, Paul; said he heard you had found a new and valuable

mineral in Borneo, or somewhere, and wanted me to post him about it. I told him that half I did n't know about your find would fill a Carnegie Library. From several things he let drop I guess he knows more about it than I do."

"That's interesting," said Ames. It was even more than that, it was somewhat perplexing. "I would like to see him."

"You probably will if you go out to the Ardsley country club next Saturday. Golf finals are on; he said he'd be there. Member, you know."

"Yes," said Ames thoughtfully, "if I can arrange it, I will be there,"

After lunch Ames manoeuvred Somers into the library for a heart-to-heart talk. He well knew his man, had pulled oars with him in the same barge and admired him.

"You're a member of the Ardsley club and I'm not. I want you to take me under your wing and if you are a good actor we can have a kettle of sport." And then Ames confided the groundwork of conspiracy.

The suggestion made by Mrs. Worthington was expanding like a green bay tree.

"You see," concluded Ames, "I have to knock off work for a spell, and this will be a bully

diversion and will throw the curious off the track. This Earl business is beginning to cloy."

Somers was just the man for the adventure and ready with inventive schemes for its execution. There was no time to waste either, for the successful conclusion of the campaign required somewhat elaborate preparations on the part of the principals and their seconds.

On the day before the tournament Somers, accompanied by Ames and Eph, sauntered into the crowded locker-room and casually joined in the open discussion which opportunely bore upon the sporting chance of making the eighteenth hole in four. This hole was four hundred and eighty-three yards, and five was par.

At the correct moment Somers aggressively remarked that if the right sort of ball were used the hole could be made in two.

There was a moment of gaping silence broken by a chorus of both rude and good-natured jeers, then from under the shower a spluttering, "Sure, with a rifle ball."

Somers, sly one, tempting his quarry into the pit-fall, then declared with weakening confidence well feigned, "No sir, regulation size rubber golf ball, I'm pretty sure of it."

"Fired from a mortar?"

"No, driven with a club, driver or cleek—yours, if you say."

"Who will do it?"

"I will and I 'm a dub. Ames here would do it in *one* stroke."

"Ha! Say fellows, here 's a crazy man."

Somers made a show of irritation. "You are a bunch of yokels, you fellows. Just because a thing has n't been done before, it 's impossible. Now, I say it *can* be done and I'll bet any or all of you a hundred dollars, without odds, that my friend can do it. Can't you, Ames?"

"I never did, but I hope I can make your bet good," replied Ames with some modesty and more trepidation.

"There you are," Somers exulted. "Now back down."

"Not much! I'll cover you, Somers."

"I'll take a hundred of that easy stuff," said another.

"Let me in on that."

"And me."

"And me."

"That 's five," tallied Somers. "Any more?"

The word was passed and six more were taken on, if not in.

The memorandum was being made when one of the men exhibited some uneasiness. "Any trick in this, Somers?"

"Two tricks," Somers confessed. "Knowing how and then doing it."

"Does your friend earn his living by his skill in——"

"No, he does n't," Somers retorted with some fervor. "He has never done the feat yet, and as for the money, I propose that the winnings go to the Red Cross."

After a little parleying all agreed except two.

Then with the bets safely cinched Ames quietly observed. "It's a good cause and I would like to place another bet."

"What's your proposition?" one man asked.

Ames consulted a score card, then said, "Let's see, the distance from number fourteen tee to number five green is fourteen hundred yards, practically four fifths of a mile, isn't it?"

Several men gathered around him and verified the distance. Interest was not lacking.

Ames continued, "I believe with good luck I could drive from number fourteen and put the ball in the fifth hole."

"What! One stroke?"

"I think so. I never did it, but I have great confidence in the Nilgrav golf ball and I'll wager three thousand dollars against five thousand—winnings for the Red Cross."

"Could n't double that bet, could you?" and a heavy red-faced man pushed into the group—the leather profiteer.

"Oh yes, if you wish—more fish for the Red Cross net," was Ames's willing concession.

The bet was recorded and certain conditions stipulated. Each ball used was to be handed to two of the committee at the last moment, duly marked by them for identification, and they were to tee them up! Two committee-men were to stand near the cups and lift the ball therefrom—if it went in. And Ames was permitted to select his own caddy, who was to be allowed to hold the flag in the cup, the flag-staff to be three times the usual height and float a double sized target of bright red with a black center.

"What's the use of that?" one of the men asked.

But another clubman spared the plotters the necessity of answering. "Great Scott, let him have any flag he can *see*—he can't use a telescope."

Arriving at Somers's home that night, the three conspirators carefully looked over their stage properties and Eph was put through a part rehearsal. Ames and Somers were to each assume half the bet risks.

"We are out a wad of boodle if anything slips up on us," was Somers's comment. "Sure the little pills will work?"

"If we were dead sure of it we'd be rummy sports," answered Ames. "I may bat at it and miss, I——"

"Stop! You make me nervous," groaned Somers.

"And Eph there, he might forget to push down the flagstaff and then the committeemen would hurt their fingers trying to detach the ball, and——"

"Stop, Ames I tell you. I love the Red Cross, but I can't afford to *support* it," Somers vollied. "Here's a quarter, Mr. Thorp—*please—don't—forget!* Push that flagstaff down to Java!"

The eventful to-morrow became to-day and it broke bright and fair and continued so through the tournament program.

The golf finals attracted a large Saturday crowd to Ardsley, and the news of the wagers

had not only leaked but poured forth until the newspapers gave front page space to the story, and, in consequence, attendance was greater than at any time in the history of the club.

Special arrangements having been made with the Greens Committee, match play was suspended between two and two-thirty in the afternoon and all attention was centered upon the wager events. Only a few of the expert golfers took the proposition seriously, the rest were only amusedly interested. To them it was to be the penalty of nineteenth hole indulgence, or the smart Aleck advertising of a new golf-ball exponent, but in either event there was novelty. Everybody wanted to see the principals so that they could better illustrate the stories that for a few days at least would be listened to as current gossip.

The committeemen took stations; those for the green had accompanied caddy Eph to the hole.

"Ready for Mr. Ames," called the chairman.

"Ready here, sir," Ames replied.

A hush blanketed the gallery.

"Mr. Ames will attempt to hole in in one," the chairman announced with charitable tolerance.

Ames handed the committeeman a golf ball. It was closely scrutinized, seemed to pass muster, and then with their backs turned to Ames, each man made distinctive markings upon it with a fountain pen, one in green ink, the other in red.

One of the men approached Ames with the ball in his hand. "High or low tee, Mr. Ames?"

"About the average, please."

Ames took his stand, flexed his wrists, wiggled the driver, glanced at the flag and drew back for the drive.

His eye was on the ball, but a strange compulsion led it off for just a flash *to the face of Eric Herancourt*—to eyes set with snaky fixity.

The club descended, followed through; and the regulation size rubber golf-ball, containing Nilgrav and garnished with red and green ink—rested stupidly, solidly on its little sand dune, undisturbed!

"One stroke!" called the chairman.

It was an awkward moment for the gallery,

there was no victor to cheer and the crowd scarcely knew what was expected of it, or what was the proper thing to do.

A murmur arose and spread. It was inarticulate but it uttered disappointment, some sympathy, too.

Ames looked for Somers, saw him talking to several of the men to whom he lost. They were delightedly expressing their condolence. And then Ames's jaw set so hard that his chin pushed forward like a battering ram.

"Next event from the fourteenth tee," called the chairman, picking up the slumbering ball and heading the gallery procession.

Ames approached the group surrounding Somers; Herancourt he forgot.

"Somers, you picked a loser. I'm sorry I fumbled, but I won't again. Ask your friends if they don't want a hundred each, no odds, on the next event, you know I got five for three from the big fellow."

Somers's friends jumped at the chance but stipulated that the Red Cross was out of this deal, it was to be a matter of personal profit or loss. Ames agreed. Then he sent Somers over to post Eph which was more than a little important.

"Will we use this ball, Mr. Ames?" asked the chairman.

"Rather not if you don't mind," Ames answered with no great concern, "that one is a Jonah, but as it is marked, just retain it."

"Suit yourself."

Ames handed him another which was then marked in the same, or a different manner. He never knew.

Again the warning was given and again Ames responded.

This time he took a broad mashie with almost as much scoop as a spoon. He felt safer with it but the crowd disapproved. Ridiculous! A drive of almost a mile with a loftier when the longest ever made was one quarter of that distance and with a special driver at that! And did he hope to sink it in the hole? Was the man a fool? What under heavens was the sense of it?

"Silence is requested," rebuked the chairman.

Ames shaded his eyes—away over the third hill fluttered the high flag. Eph he could not see.

Swinging back slowly and, with no object in the world in sight but that white sphere, he brought the club forward and well under

and a sweet sound like a calking tap smote every ear. Then a loud buzz, punctured with excited cries of "Did you follow it?" "How far did it go?" as two thousand wondering enthusiasts moved like a wave toward the fifth green.

All were in doubt for some minutes. But they presently saw a throng surging around the fifth green, then dozens of hats, caps and handkerchiefs flashing in the sunlight, the high flag wig-wagging frantically on the freshening breeze, the tumult of shouting tempered by distance.

The committeeman, at Eph's urgent warning, had allowed nobody to stand in the right of way between the fourteenth tee and the fifth hole and it proved a wise precaution, for those who were able to see the flight of the ball saw it loft well into the air with a peculiar inverse curve, and then fly for the hole on an aerial route different from any ever seen before.

It struck the green two feet from the flag-staff, cut a very damaging furrow in the velvety wold, hit the stick square and fair and dropped to the bottom of the cup.

Eph, *leaning on the staff*, for technical reasons, peered into the hole, then, with wild

triumph he raised and waved the red and black flag and waited for the committeemen to lift the ball.

They promptly did so and studied it with awe. It bore the unmistakable marks of the referees and was held in close custody until their arrival at the goal. But before their arrival the decision was unofficially announced and the crowd at once celebrated.

Ames and the men who officiated at the take-off, came from the main gallery and, after the ball had been duly identified, it was handed around, and for two hours or more examined and weighed and then at the request of the chairman, bestowed by Ames upon the club as its most interesting trophy.

The ball, in truth, received as much attention as Ames. In less than a minute after the result was formally declared, he was pointed to, stared at and talked about in a degree that was most embarrassing and his ears burned from constant references to the "Earl of Hell."

"Let 's trek it right *now*," said the victorious victim to Somers. "I 've had enough. I 've had too much."

"All right, Earl, as soon as we collect," answered the practical Somers.

"Hello, Paul." Ames recognized the voice at once, and turned.

"How 'do, Herancourt," Ames returned, but both his hands were caring for his sweater, clubs and memorandum book. Noting which, Herancourt's hands were quite satisfied to remain in his pockets.

Herancourt spoke his mind at once. "I know that the old friendship has been busted, Ames, but I don't see why we should n't do business together." He fell into step with Paul, his voice pitched to a semblance of appeal. "I *do* want to get into business again, and I want you to help me. Now, will you?"

Ames was astonished at the audacity of the proposition, in the light of Dr. Worthington's disclosures. How should he answer him? After a perceptible hesitation, he said. "Ride into town with us, Eric, and we can talk it over before train time. I'm going to New Haven this evening."

"Thanks, Paul," and they walked over to the club.

So Ames, Somers, Eph and Herancourt left the club in Somers's car as soon as they could get away, Somers driving and Ames and Herancourt in the back seat of the touring car.

Realizing that his time was short, Herancourt began at once.

"This golf ball exhibition is a surface stall, or I lose my bet, Paul. You've no more notion of putting a new ball on the market than my grandmother. It would n't be legalized and everybody knows it. They don't know what you are up to, but they are not completely deceived, I'm telling you."

Ames was somewhat annoyed, but temporized for the moment. "Deceived?"

"Yes, and I'm telling you, old man, that *you* are the one who's being deceived," Herancourt came back.

"I'll bite," answered Ames. "How am I?"

"A long time ago, Ames, you told me something that I remembered and profited by on many occasions. You told me that your father acknowledged to you that the only time he ever deceived any man in a business deal was in pretending that he did not know they were trying to deceive *him*. Remember?"

"Yes."

"Well, most of us fellows at the club, and I am among them, now realize that there is something more to this golf ball test than you are telling and they are pretending they believe

that 's all there is to it. They are fooling *you* into the belief that *they* are being fooled. They know that you 've got something that 's valuable and they want it. Now, Paul *I* want a slice. Give me a chance at it, will you?"

Ames could not help but admire Herancourt's perspicacity and the directness of the attack.

"I 've nothing ready to exploit," he said truthfully.

"You will have soon, I 'll bet, and I know you well enough to know that it 's a corker. Show your hand, Paul; let me in. I 'd rather be tied up with you than anybody in the world. You 're a wizard."

"I 'm not ready yet for any exploitation and, to be frank with you, Eric, I cannot see where there is any need of outside help, certainly not now. But if you need a loan——?"

"Loan! Hell, no! My father left me a big enough stack of yellow chips." Herancourt did not state it boastfully, but with guileless spontaneity.

The statement roused Ames from a state of conciliatory bounty to a sense of the inconsistency of it all.

"Then you can't be in great need of anything that I have," he remarked dryly.

"Oh no—no—" Herancourt began cautiously, "it 's not money that I need ; it 's useful occupation, something interesting, some excitement, you know, and you have it in that new metal of yours."

"What!"

"Why that Nilgrav stuff, you know. Heavens! Can't I see the ham fat on the Rabbi's beard? I read the papers, man, and everybody is talking about the mysterious doings of the Earl of Hell."

"Yes, that 's true enough, but how do you happen to think there 's a new metal?" Ames appeared annoyed.

"Just simple deduction—as we used to reason from induction to deduction. You are a metallurgist and a prospector. I know your specialty and I 'm a good guesser. Right?"

Ames made no answer. There are times when silence is the best rebuke to impudence.

"What say, Paul?"

"I've nothing to say—nothing to offer. I can't see any advantage in bringing in outside interests. Don't want them."

Herancourt turned in his seat almost facing Ames and, placing a hand on his forearm, spoke with great earnestness. "Look here, Ames,

if you have n't anything to offer, I have, and it's so good you are going to take it. I want to close a deal with you before we arrive at Somers's house. I want to head off any offers that will be made you and I am going to talk big money. Listen. I will pay you fifty thousand dollars right now for a thirty day option to buy a half interest for a million dollars."

"Too much and too little, Herancourt," Ames was now beginning to enjoy the play enormously.

"Huh? What do you mean? That's *option* money."

"I'm speaking about the million. It is too much for a fifty per cent. interest and not enough for fifty-one per cent."

"Oh, we don't care for control, we shall get along without quarreling," Herancourt averred lovingly.

It sounded fishy to Ames, but he had his line out and should expect it.

"Now, Herancourt, let's get down to real business. What's it all about?"

"I'll answer," Herancourt affirmed. "My cards are on the table face up."

"All right. How much do you think you know about this matter?"

"Well, I know you have found a new metallic element that scientists have suspected was in existence and you call it Nilgrav. It has peculiar properties that make it a 'propellant', as we used to say, and that is what propelled your golf ball and the boat and the basket elevator up in the Adirondacks. Such an element must have power possibilities that would be valuable in an industrial way."

The recital did not sound like good currency, but Ames gave it relative value. It was, he thought, sincere as far as it went, but incomplete.

And Eph, who had caught the sense of the discourse in fragmentary overhearings, glanced back as the car left the park, ostensibly to assure the driver that all was well for a left turn, but really to flash Ames a telegraphic warning.

"Which demonstration impressed you most?" Ames resumed in an offhand manner.

"The upward exertion of its force," Herancourt answered. "I think you might tell me this much, Ames, without giving the snap away. Do you have to isolate this stuff like we used to extract radium, or do you mine it in pure form?"

"Neither," Ames answered. "You saw our power plant?"

"Yes," Herancourt helpfully admitted.

"Well, naturally, you could not have seen it unless you had been there and had you called upon me, then you might have obtained some direct information instead of—indirect. It's a little late now, Herancourt."

One might think in terms of the fourth dimension, but what American could enter into processes of Hunovian reasoning?

Herancourt actually grinned, indicted but not ashamed. "Oh, I'm not denying it. I saw the plant and the machinery, saw a big wad of your precious metal, too, cooking on a glass skillet. You've got a good watchman, Ames, but I was doing some watching myself through a pair of excellent field glasses." He felt the jig was almost up, for his manner was now insolent.

Ames said nothing, he was studying the man's face with candid amusement. To Herancourt it spelt contempt but he was mistaken, nevertheless it riled him. The car stopped at Somers's residence.

"Don't you run away with any idea that you are fooling me, Ames, for you're not," he said,

as they stepped out. "I was on to you from the start. You are not working on any industrial proposition, your game is a new war device. They have a good name for you—Earl!"

"And with that idea in your head you tried to get hold of it—as a war invention," Ames said wearily. "Well, I'm sorry, but I'm afraid this is another bad dream for your war minister."

"When you fellows quit scrapping," called Somers, "come in and I'll give you that which both cheers and inebriates."

To Herancourt, with an uncontainable container on his hip, the temptation was greater than St. Anthony's, but he overcame it. "No, thanks, Somers, I've got a date," and he sauntered off indeterminately.

"I'm glad you turned that fellow down, Earl," Eph said. "He is a bad actor. Don't ever trust a man with eyes that you can't look *into*. You know what I mean? When you look at that fellow's eyes, you don't get farther than the coating of surface glaze—there is no depth because there is no soul back of it. I don't like him."

"He won't bother us much after this, I fancy," Ames observed.

"You may be wrong there, Paul," said Somers. "I have a hunch you may have to keep your eye on him."

"Oh well," exclaimed Ames, "it's all guess work. We can just practise watchful waiting, but watch we must, that's certain. Going to run me over to the Grand Central, Somers?"

In New Haven that evening, after dinner, Sarah and Ames were in the little music-room.

With just enough parade of the ceremonial to defer to the feminine idea of fitness (or his idea of the feminine idea) he drew from his pocket a small velvet case, but before bestowing it felt impelled to sound a note of preparation.

"Sarah, this ring may not be as handsome as some we have both seen, but it is rather distinctive. It can be changed, of course, if you don't fancy it, or if . . ."

But by this time Sarah had opened the little case and looked upon the ring itself. "Oh, Paul, how wonderful! A black pearl."

"No, not a black pearl."

Sarah took the ring from its snug little pillow and studied it.

Rather a broad band of platinum completely

incrusted with small diamonds, a flat table on the top supporting a perfectly round setting which indeed resembled a black pearl the size of a small pea, but peculiarly purplish in hue. This setting was encircled by very brilliant diamonds, so closely mounted as to almost hide the platinum.

"I never saw such a gem, Paul, what is it?"

"Just metal. Nilgrav," he answered. "You and I are the only ones in the world who possess any of it. See this," and he drew from his vest pocket another flat band of platinum with a small setting of Nilgrav inserted flush with the setting but no diamonds.

"Paul, you are beyond words. I think this is the most intriguing thing that could ever be imagined. Tell me about it, please."

"Sarah girl, it 's a long story, but this much I will tell. If under great stress, danger perhaps, you want me to know that I am needed, want me to come to you, the setting in *your* ring will send a message to the setting in *my* ring, and so long as I am wearing the ring, I shall know."

"Incredible," Sarah arose, startled. "How could such a thing be—sounds like some sort of black art."

"But it is n't and it is indeed true. Sit

down and I will try to explain, but you must keep it absolutely secret, for a time at least. The setting of Nilgrav you have is charged with electrical energy that attracts the correlated setting that I wear. That attraction is for the present rendered inert, because the setting that you have is insulated—you see, it has a different appearance from mine. If you were to remove any of the insulation from your morsel of Nilgrav that attractive force would immediately be in effect. Your Nilgrav dominates mine, because it is slightly larger; mine under the force of attraction thus exerted would try to speed to yours and would fly right to it, if it were not firmly anchored in the ring on my finger; but, being restrained, it would tug at my hand, in the direction of your ring, pulling my arm with a force equal to twenty-five pounds.”

“It’s positively uncanny,” exclaimed Sarah. “And at the same time it is strangely beautiful, like putting intelligence into lifeless metal. I cannot understand it.”

“As to that,” confessed Ames, “nobody does, but it is our job to—your father’s and Eph’s and mine.”

Sarah’s eyes glowed with a quickening

emotion; in turn they dwelt upon the ring and Ames's earnest face. In her eyes the glow dulled in tears, tears that brimmed, but did not overflow. There was a quick catch of the breath. Her voice was unsteady.

"How do I deinsulate it, Paul?"

"The insulation is a thin, tenacious film surrounding the Nilgrav but its insulating properties would be destroyed if you were to crush the setting, or even gave it a dig with a knife blade or a pin point. But," Paul added with earnest emphasis, "don't ever—please don't ever do this unless it is a dire necessity, almost a life or death matter; in fact, I can think of no occasion when it *would* be necessary, but if the occasion should arise, you have it at your command."

CHAPTER X

AMES returned to the Adirondack plant from New Haven feeling much rested and full of ideas for an expanding schedule of operations.

His run-in with Herancourt in itself had furnished material for much reflection and the first order given Eph after arrival was to arrange for additional guards and to veil all windows with a coating of white paint. Spying must be stopped.

The mass of Nilgrav exhibited no change whatever in its physical appearance, but the test of a fragment proved that its energy absorption was now approaching the equivalent of a million horsepower, despite the reduced volume of water in the stream at this season of the year.

Ames, holding in abeyance all industrial application, had diligently developed the war utilization of Nilgrav.

It was not long before he had figured out many ways in which Nilgrav would prove

an exceedingly valuable asset in the hands of a combatant force, notably as a silent and powerful propellant of both light and heavy missiles.

Drawing a battle map he placed an offensive on the right wing of the hypothetical enemy, and another on the left wing. Each of his attacking fronts were in the possession of Nilgrav elements, carefully coördinated in numbered order.

Heavy steel balls having toothed and cutting edges were connected at six feet intervals by chain links of hard steel and inside each ball a grain of supercharged Nilgrav.

Such a chain shot in practice could be a hundred feet, or even a mile in length. The field-sweeping soldiers in the front line would each lift a ball from the ground and deposit it in the open end of a discarded cannon, those men who had even numbers elevating the ball only six inches from the ground, those with the odd numbers elevating to four feet, varying the elevations as conditions made necessary.

The hurling chain when discharged would mow the field from almost ground level to the height of a man's stomach, and traveling with

tremendous velocity, would crush, break and cut down everything in its path.

The counter line of field sweepers would be stationed back of receiving columns, other condemned cannon serving for that purpose.

Inside of each cannon muzzle would be placed the properly related Nilgrav element. The officers of the new artillery tactics would exercise the care necessary to insure capsule containing the "No. 1 element A" opposite "No. 1 element B," and locate the others in numerical order, for the sweep of the chain would be distorted or broken if, say, number "108 A" should be out of sequence and "109 B" was opposed to it.

The discharge would be as simultaneous as electricity could make it, one touch of a switch key uncovering all the insulation capsules discharged; or in relays, if desired, provided the chain were separated into independent lengths.

Yes, it could be done and easily. Ames closed his eyes and imagination pictured a plain of horrors after being swept by this new war agency.

The next development of his invention was to make it doubly operative and consequently more deadly and devastating.

The sweep of the chain would be *reciprocal*, traveling in both directions, from A line to B line and then from B to A again and continuing to move back and forth as a shuttle, until destruction was complete.

This would be facilitated with the substitution of cushioned shock pillars for cannon placed at the prescribed intervals, each pillar containing its numbered element of Nilgrav and *each inclosed in an insulation capsule that could be opened and closed at will!*

By this simple mechanical arrangement not only could the parallel lines of field sweepers move in any direction, cutting down, killing and maiming entire army divisions, one after the other, under aeroplane guidance, but, electrically controlled, the insulation capsules could be operated so that the attractive force was suspended just before the responding elements reached their landing shock pillars.

This would preclude the risk of breakage to the chain, shot and pillar and reduce the chance of injury to the operators.

While the plan seemed faultless from the theoretical standpoint, Ames knew that at times a slip will occur in practice; and after working night and day for two weeks, he was

immensely relieved to see his invention in small-scale practical operation.

While the operative laws were open to improvements there was now no doubt whatever of their broad utility and to Ames and his co-workers it was clearly manifest a revolutionary method of destructive warfare had been evolved.

During those two intensely hard weeks of mechanical work several adaptations of Nilgrav to the purposes of modern naval warfare were evolved. At the end of that period, Ames, seeking his bed at three o'clock in the morning, caught sight of his worn and haggard face in a mirror, and murmured, "I guess they are right—the Earl of Hell," and did not smile in the saying of it.

During that interval of what Ames afterward designated as "diabolic activity" he had not left the boundaries of the lodge to go anywhere, or to do anything that would interfere with the development of this, to him, most uncongenial work.

He was unhappy. For the first time in his life his labors were not lightened with joy. Eph's remonstrances were as unregarded as

though unheard, and in his worriment he surreptitiously sent a telegram to Dr. Worthington, asking him to come to the plant, and, if possible, bring Sarah.

The doctor came, but alone. Sarah was ill with a touch of the grip and after two weeks' neglect, it was suspected that she also had a touch of touchiness, small blame to her.

"Hel-lo-o, Prof! I *am* delighted. This is good of you. Sarah coming?"

"No, Sarah is home, pouting. You look—you don't look well, my boy—overzeal; it does n't pay," said the doctor. "Positively intemperate. Too bad, too bad."

"That 's it," Eph exploded. "Intemperance, Dr. Worthington. He's a work drunkard! And the worst of it is that he is glum and miserable—I never saw him like this before."

The doctor put his arm around his favorite pupil, gave him a hug, a little shake and ordered him to snap out of it. "What 's wrong, Paul?"

Ames drew a hand across his forehead, pushed back a truant lock and managed to say that there was so much that was wrong that he guessed it was getting his nerve.

"That fellow Herancourt was the cause of

it," was Eph's charge. "Everything was lovely until he came on the scene with his damnable war notions and gummed the game."

"Tell me all about it, Paul, that 's what I am here for," said the sympathetic old friend.

Whereupon Ames told him, with supplemental assistance from Eph.

"And now that you have out-Frankensteined Frankenstein what are you going to do with this Nilgrav monster?" The doctor meant it as a joke, but it was too pertinent to be humorous.

"It is no monster yet," Ames retorted. "It has either monstrous or beneficent possibilities, just as it is directed. I regard it almost—almost as a sacred charge, Doctor, and I want to prevent its profanation if I can."

"Of course you do, my boy, and you can and will," soothed Dr. Worthington.

"It 's Herancourt I want to head off," continued Ames. "He is no fool, but he has a distorted intellectualism. He suspects the power of Nilgrav as war material and I fancy he would go to extreme ends to learn its secrets. By the way, the ball I used at Ardsley has been stolen from the cabinet—lock forced. If Eric obtained possession of it, there is a large cer-

tainty that he will have it analyzed and then he may try to produce it synthetically, if such a thing is possible."

"I think it less possible than it would be to produce platinum synthetically," was the professor's opinion.

"Perhaps so," answered Ames, "and if you are right we may hear nothing more from him. I have about decided to turn the whole proposition over to the War Department as an insurance policy—peace insurance. No nation, or group of nations, could combat it successfully. To insure peace on earth for fifty or even twenty-five years would seem to me as wonderful and valuable a use for our Nilgrav as any that could be devised. Industrial application would mean just money and maybe that is the right application. *I don't know.* I'm foggy in my mind at times, but I want to do what is right—what is best. It troubles me so I sometimes fear for my sanity," Ames concluded in an apathetic way.

"You dear old—old galoot you," began the doctor. "I love you for this better than ever before, my boy, and I'm proud of you. You are tired almost to death, that's the only thing the matter with you. Your brain entertains the

messenger of God. Nobody dare advise you. You do just as you are inspired to do." The doctor blew his nose. "And not a lick of work for two weeks, Paul," he continued, "even if I have to sit on you, and that would lose a poor professor his job at Yale. Back you go with me to New Haven to-morrow. You need nursing!"

Ames agreed readily enough, but took with him the specifications and some of the apparatus relating to the use of Nilgrav as an agent of destruction, for during the night he had decided that very soon he would visit the seats of the mighty in Washington.

That resolution to go to Washington and place at the disposal of the Government the almost limitless possibilities of Nilgrav was at once put into effect after Ames's vacation and he reached the Capitol early on a rainy Wednesday morning, presenting himself at ten o'clock in the office of the Secretary of War.

There was a short wait in an ante-room, followed by converse with the secretary's private secretary, to whom he introduced in a general way the purpose of his call.

The private secretary listened politely until he believed that he had gleaned the gist of

the interview, then, with continued politeness, interrupted the visitor.

"I really do not think that the secretary is the man for you to see, Mr. Ames, although I am certain he would be glad to meet you. Your course is to present this in the office of the Chief of Ordnance. Know where it is?"

"Yes, I know," Ames answered with unassumed disappointment. "Down in the munition group in Potomac Park. But I came from Connecticut for the single purpose of bringing this to the personal attention of the secretary, confident that it was sufficiently important to warrant an interview."

"I'm sorry, Mr. Ames, but there are many such matters continually brought into this office and I assure you that they are not acted upon by the secretary. Your business has to do with the ordnance department." And the private secretary proceeded to give half his attention to the opening of many letters.

Ames made another sally. "As I am a long way from Connecticut and only a few steps from the secretary, won't you please tell him that I am here and in a few words what I am here for—otherwise I shall feel that I have not done all I should."

"Certainly, Mr. Ames," and the private secretary promptly entered the big door back of the big screen.

In a few minutes he returned with perfect good nature. "The secretary says he is obliged for your kindness in calling and he is sure the matter will be very interesting to the Chief of Ordnance."

In another fifteen minutes he was in the office of that chief but found more than one door separated him from that high executive.

"Something you wish?" asked a lieutenant.

"I'd like to see the general, please."

"Oh-a what name?"

"Ames, Paul Ames." And he indicated the subject of the call.

"Just be seated," and the lieutenant retreated.

After twenty long minutes the young officer returned. "Come this way," and his leading was through three offices and into a fourth, where five or six officers sat at desks as far apart as space restriction permitted.

"This is Mr. Ames, sir," said he to the titular commander of a battalion, and that commander in perfunctory obedience to the cue promptly piped, "What can I do for you?"

"Thank you, sir," Ames replied, disguising his disappointment, "but I am afraid it would uselessly take your time if I detailed my errand. I was directed to the Chief of Ordnance from the office of the Secretary of War. I understood that the lieutenant was to take me to the general."

"You wanted to take up a matter relative to explosives—propellants, so I was told. That is my department," the major informed him.

"I am sorry, major, but that would be a poor caption for my story. I hesitate to say anything that would magnify my mission, but I want personally to place before the general the material and the plan for an entirely new method of offensive warfare."

The major smiled with indulgent amiability. "That's a blanket order, is n't it? Now, I'll tell you. Better see Captain What's-his-name over there in Plans and Designs branch. I'll have an officer show you the way," and he touched a button.

At this Ames also smiled, almost laughed. "Major, if I was not desperately in earnest about this I would enjoy the comedy of the situation. I am trying to put myself in your place, realizing that strange propositions and

strange people make it hard for an officer in your position to discriminate. But I have to discriminate too. I've come from the Secretary of War to a Major in Ordnance, but damn it, I won't go from a major to a captain. I can submit proof in five minutes that I have the most destructive war weapon ever evolved. You must arrange a meeting with the Chief of Ordnance for me, or the discreditable publicity that may follow some day will mark you the most humiliated officer in the service."

Ames's eyes blazed. The major realized that Ames might be uttering prophecy regarding undesirable publicity and in a minute he concluded he was the sort of man to be disposed of only by those higher up.

He, too, uttered the cabalistic words, "Come this way," and in three minutes had escorted Ames to the general's office and stood at regulation distance waiting for the general to recognize his presence. Obtaining the nod of recognition the major conversed with him in low tones before introducing Ames. Then he withdrew.

The general wheeled around in his swivel chair, assumed a comfortable position with

arms folded and pleasantly ordered, "Fire away, sir."

Ames began but got only a fair start when the general interrupted, "Pardon me a minute, Mr. Ames, but I want two of my colonels to hear this," and he summoned them at once.

These two colonels were less interested in Ames's narration than their superior officer and sat with stony faces during ten minutes of recital until Ames produced a small cube of Nilgrav and deliberately poised it in space, then placed it on the desk top and brushed it off to the same level in the air.

The general was amazed, so were the colonels, for that matter. One of them exclaimed, "Ha! Very clever," and spoiled the act. Ames began to feel like a street magician.

The attraction demonstration with the chain-balls was witnessed with less emotion than the other, Ames waxing eloquently descriptive as hope waned.

"Yes—yes," said the general rocking back and forth to the music of chair springs, "but such things can't be, you know."

"But, General, such things *are*," said Ames.

Both the colonels knew when to take their

feet and were now upon them, but Ames resolutely kept his seat. "You understand, General, that I am placing this system at the service of the Department?" Ames asked.

"Mr. Ames, we have no budget for anything now except for a small cut and dried regime. Even if it were tried out and we wanted it, you know the men up on the hill have pared the army appropriation to the bone," the general informed him.

"It was my wish to present it without cost," Ames answered.

"The department could not officially accept any such bestowal unless the offer first came through regular channels, but I am personally grateful to you for the tender, Mr. Ames. I cannot assure you that it would be accepted, but I suggest that you reduce the proposition to writing. Address it to the Chief of Staff of the War Department. It will reach this office in due course but must become a matter of record." The general forced Ames to his feet by standing over him.

"Thank you, sir," said Ames. "You have n't a deal of faith in the system, I take it?"

"Well, I confess my enthusiasm is throttled somewhat by skepticism. However, we could

try it out at the Aberdeen Proving Grounds if Colonel Phillips recommends. Send along your letter, Mr. Ames. Good-day, sir."

One of the colonels accompanied Ames for a hundred yards down the long corridor. "I am anxious to know how you poised that cube in the air. What do you make it of?"

"Colonel, I am sorry that I failed in my presentation. I certainly tried to impress upon you gentlemen that I did not *make* it at all. It's a natural metal," Ames answered with impatience.

"Quite so, but how do you make it do it? Some new gas?"

"No. Not gas. Just the weightless metal, Nilgrav, and its property of power storage." This time Ames replied with studious patience.

"Well, I think you've got a pretty good thing in it," the colonel encouraged. "Try and get your congressman to push it along for you. Good-day, sir."

"Maybe I will, thanks," Ames thought that was perhaps the easiest way out of it all.

He left the building looking like a disappointed job-hunter, but he was far from disgruntled. The situation grew upon him as one of uncommon humor.

Only a few days ago he had refused fifty thousand dollars for an option after just telling about Nilgrav. And now he was having hard work giving it without price to his own Government.

But instead of being embittered Ames began to enjoy the adventure. If necessary he grimly resolved, he would spend fifty thousand dollars, in demonstrations to *force* it upon the Government.

He was too sensible to feel offended. Why should any sane man listen seriously to such a presentation? He distinctly recalled the various steps that he had himself taken before he accepted the truth of the revelations that had come to him.

Angry with those officers? Not a bit, he assured himself. Under all the circumstances they had treated him with handsome courtesy and tolerance. There might be something helpful after all in the colonel's suggestion. But he would first have to catch and convince the congressman.

Returning to his hotel Ames stretched upon his bed for a half hour and thought things over, then sent a boy out for a Tribune Almanac. He would look over the Congressional

"Who's Who" and see if there was n't some senator or representative that he knew well enough to approach and confide in.

A few minutes thumbing over the leaves and his eyes rested on the name of a new incumbent, Senator Stillwell, a fraternity brother, who had recently been elected from a western state. "Just the man," Ames told his pipe and in another minute was telling the telephone.

His man was in committee meeting but after several more calls he got him and accepted the senator's invitation to dine that evening at his home on Dupont Circle.

Ames took with him his little bag of tricks and had a most enjoyable evening. There was time a-plenty to make a deliberate and calm presentation and Ames thoroughly enjoyed the unrestrained perplexity and amazement of his friend as he was led from one disclosure to another.

"You may depend upon it, Ames, that I will get back of this project; and I esteem it a privilege and a distinction to have you call on me to help promote it," he assured Ames. "Give me about two weeks to mill around and I'll send you word when to come back. The thing is tremendous—revolutionary."

Ames took the midnight train for New York and got back to the power plant in high spirits.

His work was now to prepare additional demonstrations and convincing tests to present before a joint committee which the senator was to have appointed under the direction of the President and the Secretary of War.

Four machinists, skilled model makers from New York, were at once engaged to work overtime in order to finish the necessary mechanism and it required some ingenuity to give out the work so that the men were kept in relative ignorance of the ultimate purpose of their labor, Ames and Eph doing all the final assembling in the cottage bedroom.

On the fifth day of these mechanical brewings Ames, while assembling a series of linked insulation capsules, stumbled upon a theoretical calculation that brought him face to face with the specter of insanity.

Back in his student days he had made notes from a lecture given before the senior class by a well known metaphysician.

"Each of us inhabits a mental world of his own; no other can enter it, nor can we enter into another's. Each of us has his dream of

consciousness; no one has absolute testimony to dispute the theory that the people and objects in his mortal sight and consciousness are aught but the objective puppets of that consciousness. Who is insane? Where is any yard-stick of known standards to measure the relative normalcy of thought functions? How can I go outside my own ego to range my thought processes with those of others?

“Whatever influences my ego, though it seems to come from without, is necessarily within my own consciousness and for aught I know to the contrary emanates there. How can I tell whether I am sane or insane? Can any *thought* process determine its own so-called sanity or insanity?

“Generally speaking a consciousness that agrees that two parallel lines cannot meet, and that two and two make four, we appraise as ordered and normal; and the consciousness that sets gravity at naught, that announces the exact quadrature of the circle, the transmutation of metals or *perpetuum mobile*, we conclude is a *disordered consciousness*.”

Ames closed his note book, folded his arms over his work and addressed Eph. “I used

to think that the long-haired Welshman who said that was, of all men, most in need of that mental yard-stick."

"What 's all that, Boss?" Eph said, pointing to the book.

"Read it," and Ames found the page for him. Eph read and replied.

"He's right about the transmutation of metals and perpetual motion. I don't know much about squaring the circle, but he is dead wrong about gravity, as some of us well know, or we're guilty on one count."

"I'm afraid I'm guilty on two counts," Ames said checking a nervous laugh.

"What's the other—perpetual motion?" Eph was for making it the very worst at once. So long as it suited the boss's mood to joke about a serious subject, play it out.

"Yes, it looks so," Ames said, somewhat dejectedly, his listener thought.

"Well, Earl, don't let that sadden you," and then Eph waited for Ames to deliver the epilogue for the joke was incomplete. But Ames said nothing.

After a pause Eph, whose curiosity gave place to concern, asked solicitously, "What is it, Boss? Something troubling you?"

"It should n't, I suppose. Probably a new form of nerves, but I 'm afraid we 've run head on into—into—perpetual motion," Ames said with almost pathetic admission of guilt.

"You 've been a perpetual motion machine all your life, Boss. Back up if you don't like it. What 's the big idea now? I mean what gives you that notion—if you are half way serious?"

"I am," Ames replied, "for it does seem serious. I can't get the notion out of my head. The more I think about it the surer I become. That 's what alarms me."

"Just a theory, you mean?" Eph said lightly.

"Yes, but the trouble is I don't need to work it out practically. The miserable part of it is that I seem to *know* it will work," Ames complained.

"Oh, that 's easily cured," Eph answered with relief. "Just make the bally machine, spin it—and watch it stop!"

"Maybe," answered Ames, "but I guess I will just try you out and get your reflex as a starter. Now, follow along. Here is our chain shot series; at intervals along the chain length are our insulation capsules, inside of which are our Nilgrav elements, made passive

or active as we cover or uncover the insulation. Get it?"

"All plain enough. Lead on."

Here Ames took a sheet of paper and pencil and drew as he spoke.

"Now, let's take a section of that chain with three of these Nilgrav capsules placed say six feet apart. Better still, we will use a leather belt instead of the iron chain. Securely fastened to the flat leather belt are the three capsules at equal distance from each other. See?"

"Yes, riveted to the belt," responded Eph.

"Now, then, we will slip that belt over a pulley wheel on one shaft and another pulley wheel on another shaft, keeping the capsules on the outer side so they won't bump off going around the pulleys. See?"

"Certainly. Go on," urged Eph.

"The belt is now over the pulley wheels, bearing three coördinated elements of Nilgrav, numbers one, two and three. We notice that capsule number one is on the belt two feet from the anchored element number one, so we uncover or deinsulate the anchored number one. What happens? The attraction now set in effect will pull the element on the belt in an effort to reach its affinity in the pillar and then

what happens is that the pulley wheels revolve, don't they?"

"They would be forced to—for a moment," Eph compromised.

"All right," Ames's tone indicated that he had his man just where he wanted him. "Now then, just when this capsule on the belt is at its nearest point to its correlated element on the pillar, we quickly close or insulate the pillar element, so that it can no longer exert the force of attraction."

"And in another moment the wheels will stop," exclaimed Eph.

"No, they won't," Ames sharply contradicted, "because the number two element in the pillar was at the same time exposed and it attracted the number two on the belt which occupied the former position of number one; and, when it reached its tantalizing limit, it too was closed off and number three was in position and uncovered, then covered up, and by that time a complete revolution had been made and there is number one again in line to function and so on for another revolution and another, continuing *ad infinitum*."

"I see-e-e," Eph was murmuring.

"Now then," continued Ames, "these cover-

ings and uncoverings could be mechanically operated just as the timing gear in a gasoline motor, by cog wheels or cams, or any other of a dozen devices. One of the pulley shafts will turn a dozen or more other pulley wheels and the load will determine what strength of Nilgrav elements should be used. Could be one horse power or ten thousand, and the force would be as permanent as gravity or polar attraction for the elements are never annulled by contact. The attraction is interrupted and suspended but not destroyed."

"Mr. Ames, you are right—and I am as bug-house as you are."

Ames looked far from contented. "I am sorry you see it as I do, Eph. I had some hope that you would disagree and set me right."

"Pickled tripe!" Eph exclaimed, "You do your durndest to convince me and then are unhappy when you succeed. Wish now that you had n't brought me into the mess."

"Poor old Eph. I'm sorry, too. And I'm beginning to be sorry for myself. Nilgrav has meant work and worry and waste. What has it done for me, for anybody in fact? Here we are up against another absurdity! Do you

know what I'm going to do?" Ames asked suddenly.

"You are probably going to take two or three mechanics off their present job and have them make a model of your new machine," was Eph's guess.

"Soon," said Ames, "but right now I'm going to ask Dr. Worthington to visit us for a day or two."

And he despatched Eph to the railroad with the telegram that Thursday afternoon.

On the Saturday following Ames brought the doctor from the train and found some difficulty in overcoming his embarrassment sufficiently to make a confession, for such he regarded it.

He led up to the subject by giving the doctor an outline of his doings in Washington and prepared him for the climax by describing the test mechanism already under construction.

Arriving at the cottage Ames first exhibited the improved chain shot with its new capsular Nilgrav containers.

"Getting away from the war machinery for a moment, Professor, I would like you to pass upon a sketch of a motor Eph and I designed

a few days ago," and Ames handed a fairly good drawing of the belt and pillar application.

The doctor studied it carefully, asked for some explanations and handed it back.

"Appears perfectly practicable to me, Paul. It should work without doubt."

"You remember that for quite a while our problem was the conversion of potential energy into mechanical terms. I am a little surprised that you think such a motor would operate. Now what would you suggest calling it?"

"Oh, that's an arbitrary detail. I suppose it would generally be known as Ames's Nil-grav Motor, would n't it?" the doctor answered.

Ames controlled his face with effort.

"Don't you think there would be danger of its being called, 'Ames's Perpetual Motion Machine'?"

"Possibly, by some," the doctor answered, meeting Ames's penetrating gaze with guileless challenge.

"It is a perpetual motion machine, is n't it?" In Ames's tone was more of declaration than interrogation.

"I'm not an authority on the subject, but I would n't call it that," said Dr. Worthington quietly.

"And you believe it will work?"

"I'm sure it will work."

Ames clasped his head between his hands. "In Heaven's name then, what do you mean? Here is a mechanical device which once set in motion goes on doing useful work without drawing on any external source of energy. If that is n't a description of a perpetual motion machine then I'm a pyramid-headed idiot."

"Calm yourself, Paul. You have stated, I believe, one common definition of such a machine; another is a machine that in every cycle of its operation gives forth more energy than it has absorbed. Now, your machine does not do that, does it? It gives all that it has absorbed, less than that used up in friction."

"Why, that machine will use up in friction alone in a short term of months more energy than it ever absorbed." Ames was now actually on his feet in defense of his machine.

This seemed to impress the doctor.

"Another thing," continued Ames, "such a machine equipped with three Nilgrav capsules each one hundred horsepower, would deliver that much energy in a few minutes. Does it then stop exhausted? Spent? Not much. It runs an hour longer, delivers much

more than it ever absorbed, then another hour, a day, a month, a year—ten years. The pulleys wear, the belt rots, but we instal new bearings and still run them with the same untiring Nilgrav. If that is n't perpetual motion—*what is perpetual motion?*”

By this time the doctor was pressing his head as Ames had done. He also rose to his feet. “Wait a minute, Paul. You are excited and you have me excited, too. Let's look at this calmly and sensibly. Nilgrav has opened up new corridors in the house of understanding and some time ago we all resolved that we would not be surprised but expectant when those corridors led into chambers of incredible wonders.

“Assuming that you may have stubbed your toe against so-called perpetual motive mechanism, is there anything in that circumstance more remarkable than in the revelation of a metal that in spite of the unanimous testimony of all humanity regarding gravitation, deliberately does that which since the world began was believed impossible? We know now that it was *not* impossible and soon we may learn that perpetual motion is not impossible.”

"Then nothing is impossible," said Ames impulsively.

"Nothing that is true is impossible, that's certain," the doctor replied. "And one way to ascertain whether or not it is possible is to see if it is *true*."

"The radium clock devised by Professor Strutt is a sort of perpetual motion machine."

Eph who had entered a few moments before, ventured to observe, "I was reading a book the boss has in his library and it states that the clock will run until the radio activity has ceased. That would be one thousand years or more. The author says, 'Though not a true perpetual motion machine it is one so far as only our lives are concerned.'"

"Now we're getting somewhere," said Dr. Worthington. "Radium is a marvelous substance and it conducted us along paths of hitherto undiscovered laws. Nilgrav is more marvelous and will hurry us much quicker and further into regions that the human intellect has never before explored. So-called perpetual motion is not an absolute, but a relative term; radio-activity will gradually diminish until the Strutt clock will stop, the energy of Nilgrav

will weaken until it quits in exhaustion, and the Solar System—our greatest example of perpetual motion—will itself in time cool down and cease to move.”

“That’s a wonderful statement,” was Paul’s tribute, “and it comforts me greatly. So we have n’t an absolute perpetual motion machine, but one that requires to be first charged with energy; and that afterwards expends that energy so economically that, like radio-activity, it will function for a long term of years, conserving its energy. It is almost *indestructible* energy.”

“That expresses the proposition quite clearly,” the doctor granted. “You see we were anticipating the shame of being caught in bad company. The term ‘perpetual motion’ is the name of a club having mostly charlatan members. I myself well remember Dr. Keely and his infamous exploits; and the impositions of the Marquis of Worcester and Councilor Orffyrasus occupy many pages of invention history. The other members of the club were hair-brained cranks and school-boy prodigies and we demurred at any imputation of being classed with them.”

“Exactly right, Professor,” Ames exclaimed.

"What a pity you could n't have comforted old Job. I feel like one transformed by the renewal of his mind."

The doctor chuckled in a sort of fashion. "When you get your machines on the market," he promised, "the people around here will elevate you from the nobility to royalty. You, my Earl, will then be the Prince of Darkness."

Here Eph meditatively rubbed his nose and muttered, "He's that now, I opine. He's added a new torment to the bad place—important enough to warrant somebody in revising Dago Dante's 'Inferno'—bringing it up to date."

Both his friends gave him their attention.

"Now what?" Ames invited.

"Well," continued Eph, "he's taken away the last morsel of rest from the condemned. Dante put 'em in all sorts of uncomfortable fixes but *he* left 'em gravity. The whole infernal story, as near as I can remember it, is based on climbing down and then climbing up—sort of gravity fight, but there is some rest in it—even at the bottom of the mire pit the unfortunates rest *on* something. Hell is paved with good intentions, the poets say, it——"

"And more solid things than good inten-

tions," the doctor interrupted. "Baxter says with infants' skulls, Saint Chrysostom says skulls of priests and I think Giles Firmin employs the skulls of great scholars as paving material in his verses. But pardon me, Mr. Thorp."

"The worst torment that I can imagine happening to a human creature," Eph continued, "is forever to be suspended in space, neither falling nor rising, no sense of anything solid to touch or rest upon. Since Nilgrav has come into our lives I tell you I'm mighty glad that there is such a thing as gravity; and I sure do feel grateful when I turn in dog-tired and feel the force of gravity pressing me down upon my bed. What if I could n't feel that good old bed or earth underneath me, but just kept a few feet above it, or worse still, was shoved off somewhere in black, cold space. Gosh!"

"There is certainly the makin's of a bad dream there, Eph. The application is /yours, keep it, I want none of the credit," Ames magnanimously granted.

Then followed a short pause.

"How long will it take you to make a working model?" Dr. Worthington asked.

"If Eph will tear down to Plattsburg and

bring us some material," Ames answered, "we can build a rough little fellow in a few days and nights. Stay over until Tuesday and you shall see it *motioning*."

"I'll do it," declared the doctor. "It will be worth the risk of getting fired. But I'd better send a telegram anyhow."

"The moment that our motor pulleys make their second revolution I think we had better offer our water-power machine for sale, don't you, Doctor?" Ames apparently had something more up his sleeve.

The scientist's alert mind at once got Ames's meaning. "Thunderation! You're right. Your Nilgrav motor can divert energy to the creation of energy, and energy so created creates more energy and the continuous cycle. Extending the law of the conservation of energy to reproduction of it. It is stupendous."

"But what we shall then need is a large stock of Nilgrav," said Ames. "We have n't enough to go around."

"If the machine works—and it will," the doctor asserted, "the mass you now have will be worth an amount of money reckoned in millions; possibly—possibly a billion dollars."

"That's much too much," laughed Ames.

"Pipe all hands for work on the model, Eph. We will hack out a crude machine in short order, and it will function sure as shooting."

The making of a working model began at once and as it approached completion it became more and more certain that the idea and design would prove practicable and Ames, confident of the outcome, went down into town, called Sarah over the long-distance telephone and urged her and Mrs. Worthington to be present at the first turn of the wheels, an invitation which they at once accepted. They were met by Ames and the doctor at Ticonderoga.

Early in the evening of that same day, the various parts of the model were assembled; and soon after, in a silence that registered audible heart-beats, Sarah moved a small lever and the pulley wheels rapidly revolved in jerky violence and *continued to revolve*, soon having to be slowed down by restraint with friction bands.

"What we need is some sort of governor to regulate the speed." Ames spoke with little more concern than he would, had he asked Eph to order a new pane of glass for the powerhouse.

But what had really happened in those few minutes was the witnessing by that little group of the successful operation of the first true perpetual motion machine ever constructed after hundreds of years of sane and insane attempts—operated by Nilgrav, a new element in the catalog of matter and a disturber of the traditions of the elders about truth respecting gravitation and other forces too big to remain forever hidden by mortal limitations.

All of which perhaps, is another way of saying that the promise that man should be given dominion over all things on the earth was becoming operative, because it was beginning to be believed.

CHAPTER IX

DURING her visit to the plant on the occasion of the motor demonstration, Sarah improved every opportunity to "establish acquaintance," as she termed it, with her Nilgrav-engrossed fiancé; and while admitting she had reason to be jealous of her metallic rival, she also acknowledged its claims to absorbing interest, had in fact herself yielded in a measure to its enticements.

Paul on this occasion asked her to accept a new engagement ring to replace the original one, but she was reluctant to change and said so. "This may be more beautiful but the other, my first, is very dear to me. Yes, this new one is really lovely," she conceded when she observed his disappointment, "but you see, Paul dear, I have allowed the other to become almost a part of me. What shall I do about it? I want to please you, and still I don't want to part with it." So it was agreed that she should retain both, keeping the first in her jewel case and wearing the revised edition.

The new ring was also of platinum, but with two settings instead of one—he had improved it by applying his newly evolved “reciprocal control” of the mineral element. One of the Nilgrav elements was insulated, and one uninsulated. He had also substituted a two setting plain band for the one he had formerly worn, only one setting of which was insulated.

“The idea is this,” he explained to Sarah. “If occasion arises where you want to send an emergency call to me, just break the insulation around the setting and that will summon me. This Nilgrav plot is thickening and it is quite possible that contingencies might arise when I would want to send a similar message to you. In that event I would break the insulation surrounding this one of mine, and the force of attraction then set in effect would direct you to me. If it happens that way, please come with a fierce bull pup and a machine-gun.”

The oddity of such a combination amused Sarah, but at the same time a troubled expression came into her eyes, and she opened her lips to express her apprehension. Before she could speak, however, Dr. Worthington appeared, and there was no opportunity for Sarah to unburden her misgivings.

They parted with Ames at the train for their return to New Haven, the doctor cautioning him on two points.

"Do not importune Washington to accept your Nilgrav—if they recognize in fair degree its importance then let them have a part of it, not all. And Paul, I'm no business man, but I believe that Nilgrav is now a thousand times more valuable than it was before you discovered its new possibilities. Don't let the Washington officials, or anybody else know your control secrets. They constitute assets as valuable almost as the metal."

"All right, Prof, I'll remember," Ames assured him.

"Another thing, Ames," the doctor enjoined, "that metal is exceedingly portable and two men with an automobile and a blunderbuss might steal it from you. Keep it well guarded."

Ames profited by the doctor's advice and promptly instituted a better system of police protection and also arranged for a private telephone line linking the power-house and cottage and connecting both with the long distance service.

It was three instead of two weeks before Ames received word from Senator Stillwell

requesting his appearance before a special joint committee, but the delay gave Ames the extra time needed for the completion of his demonstration apparatus, which the Nilgrav motor had interrupted.

Any apprehension Ames might have entertained that the second Washington presentation would not be seriously enough regarded to repay him for the effort of making it, was dispelled in less than five minutes after his arrival at the place of meeting,—in the executive office of the White House.

In addition to the President, Ames, and his friend the senator, there were gathered ten high officials representing the Navy and War departments, and special officials selected by the departments of Justice and State. The senator had certainly done excellent advance work.

Ames devoted scarcely two minutes to the introductory narrative of Nilgrav's discovery and little more than that to its technical correlations. He sensed that these men cared less for words than for works.

The exhibition did not include the impressive proof of Nilgrav's motionless levity; Ames had no desire to entertain his audience, he was there for more serious business. His theme today

was not Nilgrav the passive, but Nilgrav the active.

The tests were all to be illustrative of its propulsive or propellant applications and included not only the chain shot and motor demonstrations but several other devices constructed under Ames's direction by his group of skilled mechanics at the power plant.

It was a tribute to the adroit method of Ames's presentation of the motor and his purpose to deflect thought from its significance as a perpetual motion machine, that not one of the committee recognized, or at least commented upon it, in any such sense.

But its importance was immediately recognized and the President called attention to its revolutionary value for automotive purposes and made some jocose reference to the danger of "pauperizing John D."

"Its value as a motive agent for naval craft is beyond estimate," remarked a naval commander. "Think of it, no coal, no crude oil, —no fuel space. Incredible!"

"No more valuable than for offensive army operations," said an ordnance engineer.

"These experiments," explained Ames, "may

be regarded as laboratory tests and, as such, are necessarily restrictive. An outdoor test combating the element of distance might be more conclusive and with that in view it has been arranged for you gentlemen to accompany me to the Washington monument where I believe inside of fifteen minutes you will be rewarded by a far more interesting demonstration."

The President studied his watch a moment and remarked that if he could be back for a conference in twenty minutes he would like to join the party.

There was no flaw in the plans. Ames's senatorial manager had apparently provided for every eventuality; the committee found automobiles at the door of the White House and at the base of the monument the elevator was waiting, having been closed to visitors for almost an hour.

While the elevator was ascending Ames asked the President the shortest time in which he had been able to transmit messages to and from New York.

"By telephone—almost at once," the President answered.

"I mean physical transfer like forwarding a document—by mail, express or messenger," Ames defined, "round trip—both ways."

"I cannot say," the President replied. "Once I believe a letter came by aeroplane under three hours."

"One hour each way would be prompt service, would n't it, Mr. President?" Ames asked.

"Rather," the President smilingly conceded. "Two hundred and thirty miles to New York, is n't it?"

"Yes, sir, by rail, but thirty miles shorter by air line perhaps. Being the shorter way we will try to send a letter to New York and get an answer back in—five minutes!"

There were exclamations of astonishment, but the President expectantly nodded his head and, as the party stepped from the elevator, took Ames by the arm and said impressively, "I believe in fairies—the revelations of nature's marvels—and I am convinced you will do it, Mr. Ames."

His words stirred Ames and then for the first time the fear of failure chilled him, despite the quickening pulse, but he reflected comfortingly that Eph was reliability itself and the Nilgrav elements had been thoroughly tried

out. So in another moment he *expected* success.

"The mayor of New York and the commander of Governor's Island are probably with my assistant, on the roof of the Woolworth Building in New York, waiting for the first Nilgrav message from Washington. What shall it be, Mr. President?"

The President took a memorandum book from his pocket and tearing out a leaf, wrote upon it, "Greetings via Nilgrav. How will dictionaries of the future define the word 'impossible'?"

"Please sign it and indicate the time," asked Ames.

The President did so, the time being 2:21 P.M. All noted it.

Ames then quickly folded the sheet, placed it in an asbestos covered sphere about the size of a base ball, and threw it from the large window opening toward the east, then followed this act by fitting into the window a square framework of wooden trusses and springs.

The group was cautioned to stand to one side.

Few words were spoken. The soft spring air brought to their ears the sounds of motor cars

far below and the rumble of a long train crossing the Potomac bridge into Virginia.

Suddenly a crashing blow struck the framework and carried it across the chamber where it lay against the further wall, broken into many pieces.

Ames, using heavy gloves, picked up a hot spherical object, gave it a twist sidewise and took from its interior a folded paper which he handed to the President.

"The time is now 2:24," he quietly announced.

The President unfolded the sheet. It was the same one he had written upon less than four minutes before, but it had additional writing upon it.

"First endorsement. Reciprocal greetings. The word from to-day should be retired from our language."

The message was signed in ink by the mayor and the colonel, time indication 2:23 P.M., *and the ink was moist*. The missile had traveled at the rate of two hundred miles a minute, almost seven times faster than the velocity of a projectile from the highest powered rifle.

This demonstration had an almost paralyzing effect upon the group of officials, rounding

out a series overwhelmingly convincing by one that became memorable. The party then left to resume their various duties.

"Our short stop was a bit fragile for the bump, Mr. President," Ames said apologetically. "You see the messenger realized the necessity for high speed on an errand for the President."

The Chief Executive chatted with Ames for a few minutes before entering the White House and concluded by saying, "I have been informed of your remarkable explorative and research labors and I would like to know you better. If you can make it convenient, please come for lunch to-morrow, for I would like to have you meet the members of an important Foreign Relations Committee. You are in a position to contribute most valuable, perhaps indispensable aid."

Ames thanked the President and obediently made his arrangements to remain in Washington until the mission was fulfilled.

That luncheon was much more official than social, but was so gracefully presided over that with only a few minutes' loss of time from the important business in hand the two hours that it occupied were made a period of har-

monious fellowship by the actively official but hospitable host.

Late that same day Ames returned to New York, on his way to the Adirondacks power plant, but before leaving Washington he enjoyed a ten minutes' chat alone with the President, whose appreciation was expressed with great warmth and earnestness.

"Some day, Mr. Ames, it may be disclosed that your intelligent, patriotic and unselfish labors have done much to spare your countrymen the misery of another war, if indeed it may not be shown that the whole world is your debtor. I appreciate your great service and personally I am grateful. God bless you, sir."

"God has blessed me, Mr. President, and I am the happiest of His creatures," Ames responded with emotion.

He was quite ready for the relaxation offered by the comfortable trip to New York—rolling along over a smooth track on the five hour Limited. Sinking into the wide arm-chair and closing his eyes, he yielded to the luxury of well-earned rest and the passerby might well have believed from his peaceful smile that he slept and had entered into the realm of happy dreams, but not so.

Oh, if it should prove that his work would prevent the taking of life, the agony of wounds, the despair of the maimed, impoverished, sick and bereft! What meant money—millions or billions of dollars, fame, honor, preferment!

What a glorious privilege was his! Blessed? Was any man so blessed as he—Paul Ames?

Then he did fall asleep and dreamed of two grizzled old ordnance colonels playing with red and black Nilgrav checkers on an invisible table top, growling under close-cropped mustaches when flies settled upon the checkers and sunk them.

“Brush off, sir?” It was the porter, for the train was crossing the Jersey flats.

Ames taxied to the Yale Club to get his mail, telephone Sarah and eat supper, pending the time his train left for the Adirondacks. Among his letters were several from capitalists and promoters with preliminary approaches. The Newspaper Association had telegraphed thrilling accounts of the President’s test of Nilgrav and whatever scientific data was lacking was compensated for, in volume at least, by imaginative fertility.

Ames reached the power plant quite rested and keen for intensive work. Eph had an in-

teresting news item for him when he arrived. "We had prowlers around here three nights ago," he announced.

"Yes? Tell me about it."

"Dave and I went up the hill about a hundred yards beyond the gate, after supper, to smoke a pipe or two under the big white birch. After an hour or so we sat pretty quiet, an owl hooting somewhere near. Pretty soon we heard sounds in the brush and decided somebody was foraging,—coming down the path.

"Then we heard voices, talking low like, and I got to my feet. You know that tree is almost in the path. It was pretty dark. I was behind the tree and when I saw the outlines of two men just a few feet away I flashed my big electric bug right in their faces. You should have seen them hop! One was that model-maker Schwartz and the other was your fish-eyed friend, Herancourt."

Ames was both surprised and anxious.

"Then what happened?" he asked.

"I said, 'Good evening, gentlemen. If you are looking for an owl, he's right up there somewhere.' Both the men were considerably shaken, but Herancourt swore and ordered the light off his face. I got a little hot then

and told him as he was on private grounds he had better explain his business. Then he told me that his business was none of mine and, of course, I corrected him—but he helped me to do it.”

“How?” asked Ames.

“Well, just then he flashed a bug and recognized me; Dave moved up with his bug and so did Schwartz and the rest of the proceedings were under a battery of spotlights.”

Ames laughed as he pictured the scene. “And then?”

“And then,” Eph resumed, “to leave no doubt in his mind I gave him my name and told him his name. ‘What do you want here?’ I asked him.

“‘I want to see Ames,’ he said. ‘Well,’ said I, ‘you have just come from the power-plant, why did n’t you ask for him?’ Schwartz jerked out that he was n’t there. ‘Shut up, you fool,’ Herancourt commanded and then told me that he did call out, but got no reply and gave it up,—would come again. ‘All right,’ I said politely, ‘come when it’s daylight and you won’t have to use your voice—we can *see* you coming.’”

Ames laughed again. “Had he used his voice?”

"Naw!" Eph spat his disgust. "Nobody around the plant had heard a sound."

"And with that model-maker," mused Ames. "Well, we must look up his history."

The chief engineer also had a morsel of intelligence to bestow. It appeared that on the day Eph was master of ceremonies in the Woolworth Building in New York, a strange man had spent a large part of the morning in a spring wagon driving around in the thicket and making frequent use of large telescopic field-glasses.

The engineer at first paid little attention to the man, knowing that as all windows were paint-screened such observations could produce few or no results.

The persistence of the fellow marked him for interested watching and it was seen that he proceeded with brazen openness, following the fence entirely around the plant and cottage premises, apparently making his surveys in orderly plats of twenty or thirty yards.

After a general prospect it was noticed that he steadily focused upon the cottage and for ten minutes his glasses were fixed almost constantly at one angle.

The engineer got out his camera, in the use of which he was expert, and made two snapshots of the outside visitor, one at a distance of one hundred feet, without being detected.

He showed Ames prints from the negatives and in them Herancourt's identity was unmistakable.

"What do you think he was interested in?" Ames asked.

"Not in anything very long after he drew a bead on the cottage," the engineer replied.

Ames studied the prints and then went outside the fence and took the exact position occupied by Herancourt. Using his own glasses, he had Eph correct the angle as he viewed the cottage in a sweeping transit.

"Hold it!" called Eph.

Ames then minutely examined each detail in the field of his high power glasses, and found that the southeastern corner of the cottage was the focal field. No minor detail of a promising nature was in evidence unless it might be a water bucket and a white stick upon the ground.

Returning to the cottage, he inspected those two conventional objects. The stick was interesting enough. It happened to be the base

section which Eph had cut from the golf flag-staff and which he had brought home because it contained a Nilgrav element.

And, clinging to the bottom, was a mutilated golf ball with red and green ink markings upon it. Somebody around the power plant had thrown the stick on the ground, the shock had reopened the capsule, and the ball containing the related element had managed to report, evidently after meeting resisting obstacles. It had been stolen from the Club House two weeks before.

"You darling little pill!" exclaimed Ames. "Welcome home to Daddy!"

"No wonder Herancourt came a-hunting," he told Eph. "He wanted it back."

He wanted more than that and soon made his wants known.

For Herancourt kept his promise to Eph and also followed Eph's advice. He called again and in daylight, two days later.

"Watchman say, 'Gemmen at de gate to see you, Boss.'" Brutus was at Ames's cottage door.

"The watchman knows what to tell strangers," Ames answered, not altogether joyous at the interruption.

"Watchman say 'Gemmen ole' friend, name Huncote,' sah."

Eph looked up with a grin. He relished the unmistakable identification in the mistaken name.

"Tell the watchman," said Ames to Brutus, "to keep Mr. Herancourt outside the gate and I will see him in a few minutes."

He found his former classmate nonchalantly inhaling cigarette smoke through a long ivory holder.

"I don't want to appear discourteous, Herancourt, but I am quite busy. Please make it short."

"Well! Are n't you going to ask me in? I'll wear blinders if you have them, Ames. I have a business proposition to make. A new one—it's a corker."

"I will invite you inside the gate if you wish, Herancourt," Ames replied, entering protest against forced hospitality, "but I cannot ask you to the office, for I can only give you as much time as we would use in going there. We can talk here, but briefly."

Herancourt made it so. "All right. Here it is in a nutshell. I represent commercial interests aggregating much more than a billion dol-

lars. We want to buy your Nilgrav metal and we will pay you anything you demand. Name the price."

Ames produced a cigar, deliberately lighted it; then asked, "With or without?"

"With or without *what?*"

"Nilgrav, the metal *alone*, or with its operation formulas?"

"Why *with*, of course."

"Do you know what *with* implies?"

"Sure I do," Herancourt brazenly assured him. "'With' means with Ames who knows how to handle it."

Ames's gathering frown deepened to a scowl. "To Hunovian interests?"

"Certainly, why not? Hunovia's industrial interests need this new force agency more than any other nation in the world, and will pay more for it."

"Nothing doing, Herancourt, and you know it." Ames's anger rose. "You have an infernal impudence to propose such a thing. Who do you think you're talking to?"

"I'm talking to you, you damned hypocrite!"
—from Herancourt.

Ames turned and started for the cottage.

"I'm telling you now that you've made the

blunder of your life," Herancourt threw after him. "*I'll get you and your Nilgrav, too, and you will never use it. Remember that!*"

Ames ignored the threat and continued on his way.

When Eph heard what had transpired he was in a tantrum of rage and swore volubly. "You had a close call, Earl. That fellow might have shot you in the back," he concluded.

"No," Ames laughed, "he was afraid of killing the gander with the Nilgrav secrets."

Other visitors called upon Ames at the plant, many news gleaners and several representatives of syndicates eager to commercialize the new power-medium.

One of the most important group of capitalists controlling vast Wall Street interests made a tentative proposal that would have guaranteed Ames all of the first-mortgage bonds amounting to five million dollars and an equal amount of preferred stock in a corporation to control the marvelous metal.

Ames informed Wall Street that consideration of all proposals would have to be deferred until the United States Government had exercised its privilege to acquire and control all or any part of the metal and its properties.

A letter postmarked Chicago gave him just forty-eight hours to personally attend the writer on the corner of Clark and Harrison Streets and bring enough of the metal to propel a large airship at one hundred miles an hour, or suffer the loss of his heart and both ears!

Ames handed the letter to Eph. "If you think it advisable you might write the gentleman that, deprived of my heart, I won't miss the ears much."

CHAPTER XII

AMES was spending a week commuting between New York and New Haven.

After personally reporting to Washington and receiving further encouragement in the work then under way, he tentatively started negotiations with a group of capitalists and industrial engineers to feel out the enormous commercial possibilities of Nilgrav.

His physician, after an entire morning with him, had a very favorable report to make and acting upon the conclusion that it is a wise man whose opinion and judgment harmonize with one's own, Ames decided to ask Sarah to set the wedding day so long delayed, and in three months more his bachelorhood would terminate.

There was more than a little to be done before that day would dawn. He wanted to make a six-months' honeymoon trip to Europe and aimed to conclude all unfinished business before he left. This would necessitate a journey to Denver in order to profitably terminate his association with the radium company, partici-

pate in the organization details of Nilgrav Incorporated, and supervise a special development program at the plant in the Adirondacks.

Considerable publicity was now being given through the news items about a company soon to be launched by Wall Street promoters, threatening to revolutionize the motion vehicle industry, some reports averring that as the new motor would paralyze the gasoline business, an offer of fifty million dollars had been made by the Standard Oil Company for a controlling interest.

The identity of Nilgrav's discoverer and owner having figured in all this publicity, Ames was compelled to employ a secretary to handle a constantly increasing correspondence and to engage an office in lower Broadway, New York.

The treasurer of the Wall Street company attended Ames at the plant to obtain information for a final report.

"How much power have we now in the mass?" he asked Ames, pointing to the metal, now more valuable than a thousand times its bulk in gold.

Eph was within hearing and sniffed a pro-

test against the possessive "we." It struck him as badly timed.

Ames consulted a report before replying, then said, "We have, as you saw, five one hundred kilowatt generators that have averaged twenty hour operations each day since installation.

"Our last test was made three weeks ago and was deduced by divisional ratios. This chart will tell the story for the twenty months ending three weeks ago.

"5 generators, each 500 kilowatt hours, equals
2500 kw hours

"20 hours per day equals 50,000 kw hours per
day, or

"1 1/2 million kw hours per month for the past
20 months, being a total of

"30 million kw hours now stored and avail-
able.

"A kilowatt hour," continued Ames, "is equal to one and a half horsepower, so expressed on that basis, the total would be forty-five million horsepower."

"Good cookies!" gasped the treasurer.

"But electrical energy is usually sold in kilo-

watt hours," Ames proceeded to tell him, "and the average price at the plant when delivered to large consumers is two and a half cents per kilowatt hour, so the value of the stored-up energy in ordinary practice would be seven hundred and fifty thousand dollars if it were exhausted when initially delivered."

The treasurer did not get the point. "What is the cost to produce?" he asked.

"That," Ames informed him, "is a matter of interest on the investment, repairs, depreciation, rent, wages and the general overhead, but it figures out less than one half cent per kilowatt hour."

Again the treasurer commended the cookies. "That's a half million dollars profit," he announced. But a moment later he expressed disappointment. "But it took twenty months to accumulate that power."

"Certainly," and Ames made no virtue of patience. It was a cinch. "You are correct all right, all right, but while it took twenty months to mature the plant, you must remember that it will yield that fruitage of profit every day for an indefinite period."

The Wall Street man was floundering, came up for air, but was speechless.

Ames gently led him into shoal waters by an easy route. "Of course, we require no wires to transmit our power to consumers and that expense is saved them and us and also the usual wastage—leakage. In ordinary usage the consumer works his one kilowatt hour, he exhausts, uses up that energy, pays his two and a half cents for the service and keeps on paying his two and a half cents charge for every new kilowatt hour and so on and on. He will do the same with us, but we do not have to make new energy as he uses it. There is as much in reserve as he can use and the original cost to us is all of the cost for an almost limitless period."

It required some time to make the problem clear, but Ames succeeded. "With Nilgrav," he concluded, "one storage charge suffices, and it delivers energy continuously for years without any appreciable diminution. We can make Nilgrave motors, retain ownership and rent them in different power units for two cents per kilowatt hour, metering by wheel revolutions instead of by energy delivery. The machine is nothing but a framework, shafts and pulleys and costs very little to make. The licensee pays for it as an instalment charge. For quick earn-

ing I would suggest that instead of charging the licensee that twenty cents per kilowatt per day of eight hours, a flat charge of two dollars per kilowatt per month be made on short term contracts. At that reduced figure the gross income earned would be sixty million dollars per month. Two million dollars every day, not *marks* mind you, but *dollars*."

"It 's howlingly prodigious," and as he said it the financier's keen eyes radiated the ardor of his money love.

But it was made clear to him that the secrets of control would be made known only upon formal transfer of the property and that perfect title would be guaranteed by full information and proof of successful operation. The importance of this was later seen.

"How is it possible for stored electricity to be handled in the way this is in complete disregard of all established principles?" the treasurer asked.

"I don't know," Ames answered meekly. "How is it?"

"The one to ask is probably the one who can tell us why Nilgrav is the one exception to the law of gravitation," the treasurer wisely replied.

"I have thought," Ames volunteered, "that after electrical energy is absorbed by the atoms of Nilgrav its nature may undergo a change, that it may in fact be resolved into an energy element as different from electricity as the attraction of gravity is different from magnetic attraction, but capable of similar mechanical utilizations."

"Is this all there is of it?" the canny financier asked, mentally estimating its bulk.

"Probably not," Ames replied, "but it and the few separations from it are all that is known to exist and all that your corporation is to acquire. Judiciously handled it will be enough for all purposes I think. Nilgrav in itself is nothing but a scientific anomaly and would have no commercial value without the knowledge of its treatment and control."

"That implies that Nilgrav in the hands of ignorant owners would be practically worthless," the treasurer advanced.

"Until somebody hit upon its secrets," Ames admitted, "and in the effort to penetrate them they might destroy the entire mass."

"You don't say!" the investigator was alarmed. "How could that happen?" He asked it innocently enough.

"It would n't be likely to happen—*here*." Ames sought to be polite.

"Quite so, I see. Pardon me, Mr. Ames, I think I have all the data necessary to make my report."

Whereupon the treasurer left in a golden haze.

Several mornings after this visit Ames fancied he discovered a change in the color of the charged Nilgrav mass and summoned Eph and the chief engineer. Neither had observed any difference in its color until Ames called attention to it, but they now agreed that it had taken on a tinge of blue.

"Boss, that scares me some," Eph exclaimed.

"We will play safe," was the boss's immediate conclusion. "Stop the generators!"

When the power was turned off Ames made a careful examination of the mass and although he found no recognizable sign of disintegration, he was perplexed and troubled at the change in its hue and pondered long over the phenomenon.

During the evening he called Dr. Worthington on the long distance telephone and guardedly outlined the situation in asking for advice.

The doctor's opinion was that while he did not believe there was any danger of disintegration, there might be some danger of overfeeding and his prescription was to let the mass fast a spell. "The color is probably only surface deep, due to dampness or other atmospheric effect," he offered.

But Ames again decided to play safe.

His decision was not only to cease feeding the mass, but cut it in two equal portions, safely store one of them and if he found no interior signs of break-down, to then place one of these portions on the charging plate and resume the gorging process. If anything went wrong he would still have half of the priceless amalgam.

The cutting of the mass was a nervous operation because a bungling movement could easily result in a live contact that would not only deenergize both halves, but might be attended with serious consequences to all nearby.

There was enough pent up energy in that sullen bluish mass of weightless compound to move a mountain and cast it into the sea, to destroy a score of villages and rebuild them.

But with proper care no accident would be likely to happen and none did happen. Yet

Ames and Eph both indulged in a deep sigh of relief when the task was successfully accomplished. The mass, now exposed sectionally, showed no disintegration whatever. That was a greater relief.

One of the two segments was then completely insulated, the other allowed to remain uncovered, as it was to undergo additional charging as soon as the machinery had been overhauled. Pending that time it was put in the new iron safe in the cottage.

The insulated portion Ames wrapped in a blanket and, working in the dark that night, skilfully hid it away beneath the floor of the cottage office and directly under the safe that contained the other portion.

"As Brutus might say, 'I ain't castin' no 'spicion' on the vigilance of our watchmen, but I shall feel more comfortable on the Denver trip knowing that you and I are the only ones who know where that insulated twin sleeps," Ames voiced to Eph.

Both men did considerable measuring and speculating in an effort to determine which of the Nilgrav "twins" was the larger and which in consequence would dominate the other. With any other substance the process of weigh-

ing would reveal this, but weighing the weightless was a new problem and, as the two pieces appeared of equal bulk, that problem was not workable.

The following day the engineers spent in overhauling and cleaning the machinery. Eph improved the opportunity to take Ames's car to Plattsburg for replacements that would take two days to complete and this permitted Ames to spend a quiet day in the cottage, catching up with his private correspondence and browsing through some favorite books.

It had been arranged that when Eph returned with his car Ames was to motor to New York and meet Sarah, who had been there for several days shopping and attending the modiste selected to supply the trousseau.

It had been a thoroughly satisfactory day for Ames. At night he called Sarah on the telephone at the Biltmore, as he sat in his big leather chair with feet on the desk, drowsily smoking, and reflecting upon the many good things that had come into a life crowded with interesting events.

The cool autumn air blew gently upon him from the open door at his back and through half closed eyes he noticed the hour. Ten min-

utes of ten. Time for an early bed going and an early rising.

"Ha! So! Salutations, Earl!" The voice at his back came with such unexpectedness that Ames's tilted chair was almost upset by his muscular reaction.

Before he could turn a man was at his shoulder, a man with an ugly automatic. It was Herancourt, and as Ames saw him he also saw or felt other men move to his other side, fill the doorway, surround and block escape. As a detail he saw rubber sneaks on Herancourt's feet. His own feet he removed from the desk and tried to remember in what drawer he had placed his revolver, then his muscles relaxed and he resignedly waited.

There was the shortest of pauses.

"Ames, I might have worn a mask, villain fashion, but you would n't have been deceived. You 'd have recognized me all right and you know what I am here for." It was not a question; it was a defiant declaration.

Ames nodded affirmatively.

"The sooner you turn it over, the sooner the job's done."

Ames now spoke, sparring for time. "Did you look in the engine-room?"

"Oh, yes," Herancourt replied in a bored tone. "Come now, quit stalling. Where is it?" Then he went to the closed safe and tried the handles.

Ames began to realize the seriousness of the situation. If Herancourt had searched the engine-room the men there must have been overpowered, perhaps killed, yet no unusual sound had been heard. The melodramatic extravagance of the scene was almost beyond belief. He turned to look over the stage. To his left an old schoolmate and business associate covered him with a murderous weapon, to the right and at his back, six more men, four of whom also had revolvers in hand. One held a rope. There was no chance for a fair fight. To temporize was the only rational policy.

"What's the idea, Herancourt?"

"We are here to get Nilgrav," said that personage with a frankness that told of desperate assurance.

"You are here to *steal* it?"

"I'm here to *get* it. You've had your chance to sell it. I told you I'd get it—and get you, too, did n't I?"

Ames could n't deny it. He had been told several times. Again he nodded.

"All right. Now will you open the safe?"

It was now time for Ames to answer. To lose an agency that was capable of maintaining peace between nations was dire enough, but to give it into the hands of the enemies of peace!

"No, Herancourt, I certainly will not."

Herancourt shrugged his shoulders and spoke in his native tongue to the man with the rope.

Ames was tightly bound, arms and legs, then roughly thrown upon the floor. Another man now took charge of the proceedings and ordered tools and explosives which the intruders had left just outside the door.

Then Ames at close range and in good light intently witnessed the preparations for blowing a safe door.

When the drilling and pouring were finished one of the men whispered to Herancourt.

"No," Herancourt answered him, "take him out," and turning to Ames said with grim sarcasm, "I am saving your life, Ames. We are going to use you later."

Ames was at once carried outside, all the others following, except the man who placed the fuse. Out in the open he took a good

draft of the sweet air and tried to relieve the rigid set of his shoulders, but without success for the rope was unyielding.

He counted eleven men around the cottage and could see several move about the power plant, one of them standing over a form in the doorway. The fence gate was closed, but no sign of the keeper. Ames surmised that the premises had been entered by cutting the wire on the north boundary.

Lifting his voice to full strength Ames shouted, "Dawson—Brutus—Caldwell—help!" Oh, if Eph were only there!

Herancourt stepped up quickly and gave him a sharp kick. "Shut your head, will you? You will get no help from your men. They're fixed." Then to one of the men he called, "Get a towel and tie up his jaw."

While the gag was being placed the nitroglycerin exploded with a smothered roar and in a few moments Herancourt and his squad entered the office. Ames could see them through the doorway.

Both doors had been forced in a very neat fashion and Ames could see the Nilgrav in Herancourt's hands, could see him scanning it closely and heard him give an order to the men.

Ames was then brought in and placed in a cramped position in a chair, and the gag removed. Herancourt still with the Nilgrav in his hands had taken a slip of paper attached by a rubber band to the metal and was reading it. Ames regretted that he had placed this clue in Herancourt's possession for the slip read "Probably the dominating half." Herancourt then observed the marks of cutting where the loaf had been halved, and another search through the safe followed. Herancourt's disappointment resulted in anger.

"Now then, I want the rest of this," he said in threatening tones. "I'm not to be trifled with. Where is it?"

Ames made no reply.

Herancourt cursed and crowding the cold muzzle of his automatic into one of Ames's eyes shouted wildly, "Quick now, spit it out if you have any sense. If you don't, so help me God, I'll blow your eye through the back of your head."

"Don't let your rage defeat your purpose, Herancourt. Nilgrav without the secrets of its operation and control would be worthless to you. If you pull that trigger, you not only

commit murder but you shut off the metal's usefulness to you."

Herancourt for answer withdrew the automatic, looked at his watch and ordered a quick search of the cottage and another search of the power plant; and placing the Nilgrav element in a large Gladstone bag belonging to Ames, took part in the rummage himself.

Great nervousness possessed him. It was apparent to Ames that he was spending more time in the quest than he cared to, or felt safe in doing.

His men at the cottage at least were making a thorough job of it. Every drawer, trunk and box was systematically overhauled and as each was searched it was thrown out upon the ground. Closets and shelves and the air chamber under the roof were gone through and in fifteen minutes the cottage was almost unfurnished.

"Herancourt," Ames ventured, "you won't find that other half in this cottage, nor the power building either. Believe me or not, as you please."

"Then I will take the controlling half and the other will be no good to you," Herancourt retorted, "and I'll take you with it." At this

his face beamed with malicious triumph. "Do you realize that you are about to make a journey in a submarine?"

Nothing that Ames might have tried to anticipate could be so remote.

He was almost staggered at the thought; it was easier to make no reply. Herancourt was plainly enjoying his consternation as he again addressed him. "But you *are*. As my prisoner guest you will go aboard the new U-90 in a few hours and you will be bound for Attila ten minutes later. Think of the honor. A four thousand ton underseas boat sent over here just for you and your Nilgrav."

Ames swallowed a dry lump, but managed to force a smile. "Torture chamber?"

Herancourt flipped his cigar ash high in the air and answered lightly, "Not necessarily, if you listen to reason. You can facilitate the work. It will prove to your advantage. If you refuse, you'll take the consequences and, while it may delay us, it won't defeat us."

"I would like to use the telephone before we start," Ames suggested.

"Bet you would," Herancourt snapped, "but you will not."

"You can do the talking," Ames modified.

"No!"

"May I leave a note for——"

"Nix on any note!" Herancourt jumped up briskly and called, "Get the cars ready, gag this man again and carry him out."

Ames succumbed for a moment to hopelessness. Closing his eyes he began to think. Then he remembered his ring. But with tightly bound hands the operation of crushing the insulation appeared impossible.

"Let me pack a few clothes to take along," he asked Herancourt.

The man gave him a cunning survey. "Tell my men what you want. They can pack a few things."

That ruse was a failure.

Ames thought it must be eleven o'clock. The big clock had been broken in the search havoc.

It was too apparent that Herancourt suspected him and for good cause and any further request would increase that suspicion. The gag was replaced.

"Take him out and put him in my machine, the Benz," ordered Herancourt.

Ames's heart beat like a trip hammer. Now, and here was his chance, he did not know just

how, but he sensed that it must be now or not at all.

One man took him by the feet and another raised him by the shoulders and out of the chair. This was the instant for action.

Ames stretched and deliberately drew up his knees to ease the cramped muscles and then with tremendous force and speed the legs straightened out, caught the man lifting them full in the stomach, sending him bowling against the safe. The other man at his shoulders got half the force of the rebound and fell back heavily with Ames on the fellow's chest. And in the next two seconds of time Ames had squirmed and contorted his body so that the bewildered man under him had received four crushing lunges in the mouth with the back of the pinioned right hand.

They were less like blows or hits than heavy grinding, milling rasps, delivered with the intensity of a desperate purpose—lip cutting, tooth breaking thrusts such as cave men would inflict fighting in the dark with bare hands and lusting to mutilate in the killing.

Four men were upon Ames in another moment, kicking, beating, dragging him away, but he saw his victim rising to his knees, saw the

hideous mask of red that covered the entire face, the sickening disfigurement of jutting and broken teeth—and felt sorry for him.

He saw the man straighten to his feet and lurch toward him cursing; felt a stunning, singing shock on his jaw, and then dreamily wondering whether the Nilgrav insulation was broken, collapsed as limply as his bonds would allow.

A procession of five cars filed through the narrow mountain road at eleven o'clock, struck the highway at Keene and divided, three going north and two east. Twelve miles further one of the east-bound cars continued east, the other, the big Benz, turned southward, roaring and ripping toward Saratoga at a fifty mile clip.

The night air was damp and cold. Ames soon stirred and as consciousness came he thought him to pull up the blanket and finish his sleep—but he could not move an arm. His head ached and from the sound of things and the jolts he soon realized he was in an automobile. Nor could he move his legs. It was a nightmare surely, but he *could* open his eyes, and after doing so, was at once cognizant that he was awake.

He was in the back seat of the tonneau and between him and the searchlight rays on the road were two men. One he should identify, there was something familiar in the dark outline of that back. No, not Eph. Eph was in Plattsburg. And this man at his side? No, he was a stranger.

He could only breathe through his nose. Why? And the pain in his head, legs and arms. Why?

Then he became conscious of an insistent, pulling drag at his right hand; it pushed tire-somely into his back, made itself felt over the sharp nagging pains from head to feet.

The right hand—the ring—Sarah—the theft of Nilgrav. He started up, now fully awake and then recognized Herancourt. All the scenes in the drama romped through his head, and he wanted to rub his eyes.

But what was that compelling summons from Sarah? He had tried to summon *her*. Had he blundered in the coördination of the Nilgrav ring elements?

Then his heart leaped with joy. His message had reached her, and she, God love her, had deinsulated her call element to assure him that the signal had reached her. The rest de-

pended upon her resourcefulness and Ames banked on that.

Happy? Ames wished he could shout.

As the car rushed toward a sign post Ames read, "Saratoga, fifty miles," and he figured that he had been unconscious for sixty-six miles—lapsed time he could not even guess. It was very dark. Although he ached in every bone and muscle and the hand with the Nilgrav ring was burrowing steadily into his spinal column, an uncontrollable drowsiness stole over him and in a few minutes more he was heavily asleep, nor did he waken until the car lurched around a sharp corner in Troy.

But if this unceasing tug of the Nilgrav ring was a tiring strain upon Ames during the short time he was conscious of it, more so was it to the wearer of the other Nilgrav ring and, although it tortured her, Sarah feared to remove it lest it accidentally should be drawn from her and thus defeat its emergency purpose.

Sarah had been in her room at the hotel since dinner, fatigued and about to retire. With her mother comfortably tucked into bed Sarah, seated nearby, was in the act of winding her watch when her left hand impulsively shot forward and dashed the timepiece against

the wall. A startled cry escaped her as the hand remained rigidly stretched toward the north like the pointer of an exaggerated compass, straining the ligaments in the forced extension.

In another instant the significance of the happening struck her with full force. That it might be without design or intent was possible, but this was not for her to speculate upon. She had received her summons to respond, the message was unmistakable and it spelled a quick call for help.

Her sense of direction could not tell her from what cardinal point the force of attraction was exerted, but having talked with Ames at the plant just an hour before, she knew he must now be there or thereabouts.

Then she proved what she was made of. Forcing the hand to her side with difficulty, she sprang for the telephone and sent in a hurry call over long distance for the plant, then a call for the New York Chief of Police at headquarters.

To the Chief of Police Sarah made a quick and concise statement of the case and asked for several men to accompany her to the power plant. The chief informed her that his juris-

diction did not extend beyond the municipal limits.

"Will you supply them on the authority of a request from Washington?" Sarah asked.

"It's somewhat irregular, but if they have n't men here on assignment we will take the chance," the chief assured her.

"Please send them to the hotel now, so they can be ready if no other way opens up."

Sarah then put in a rush call for Washington and in six minutes had aroused Senator Stillwell.

"Take your men to the plant and depend upon me to fix it with the chief through either the Department of Justice, or Secret Service. I'll have him 'phoned in half an hour," and the senator's receiver crashed.

The ring was cutting her finger but by inserting a shoe lace she managed to relieve the sharp contact and divide the strain so that it was largely taken up by the palm and back of the hand.

Then a thought struck her. It was within her power to summon Ames and that same message would tell him that she had received his—if alive. And then she broke the insulation of the setting in her ring.

Next she called for the official railroad guide and asked her mother to pack a small handbag. "You stay right here, Mother, until I get back. Telephone Dad to come here to you and be ready to go anywhere afterward."

The next train was on the Adirondack division of the New York Central, leaving at 12:24 A.M., the nearest point to the plant by this route being Lake Placid, but Sarah could motor from there in an hour.

It was now ten minutes of twelve and no report upon the call to the power plant.

Answering a knock at the door Sarah admitted four of New York's finest—three big intelligent, determined corporals and a sergeant who seemed keen for the trip and hoped it would not be called off.

"I have the transportation order, Miss," the sergeant grinned, "to anywhere."

"They don't reply," was the final long distance report on the plant call.

Again Sarah called long distance, got Elizabethtown, told her story and was assured that the marshal and several State constables would be at the plant as soon as an auto could cover the distance. It had occurred to her that they might render some aid before she arrived.

Six minutes of train time. Sarah, now feeling the nerve strain, went to the 'phone to call up the Chief of Police, but as she lifted the receiver the call came in.

"Miss Worthington, it's all right. Call Sergt. Dunny to the 'phone for orders."

The 12:24 left at 12:30 that night for it was held by police orders until certain tickets were obtained and certain five passengers were known to be aboard.

Being late in the season for mountain-bound travelers there was plenty of space in a through Pullman. Sarah was too excited and alert to any possible opportunities to risk going to bed, or to sleep. She sat in the darkened sleeper gazing out of the window, occasionally talking with the sergeant whose orders were to remain within calling distance every minute. The other officers were in the smoking buffet and under similar injunctions.

As the train passed the Ardsley station Sarah recalled Ames's account of the golf extravaganza—the first public demonstration of Nilgrav's mysterious properties. What had it all resulted in? A swift resentment flashed up and she hated the trouble-causing stuff. What calamity had it brought to Paul—to her? And

like an avalanche, now that the diversion of doing was over, there burst upon her an agony of fear. Nothing but the direst circumstance would have impelled him to send that ominous, silent message. It might have been the cry of death.

"Oh Paul, keep courage, I am coming to you, dear—coming——" and her breath choked in convulsive sobs.

The big sergeant crossed over and put his mighty hand upon her head, thumping it gently with the index finger.

"There, there, dear lady, never mind, they ain't nothing so bad but it kin git worse, so don't be discouraged. And ye kin count on Sergeant Dunny and the picked men wid him. 'S all right, just you cheer up. Want a drink o' water?"

The paroxysm was quickly over, but she felt better because of it.

That Herancourt figured in whatever events had caused the call Sarah had no doubt, and with the intuition that all mothers' daughters possess in some degree, she felt certain since the telephone was unanswered that a raid had been made upon the plant to seize Nilgrav.

The train stopped at Poughkeepsie, stopped

too long after covering only seventy-three miles in two and a half hours, she thought.

But soon the lights on the long river bridge twinkled in a high flattened curve for the train was again on its way.

She was quieter now, and riding backwards, her arm resting so that the pull was against the seat cushions, she gradually relaxed, sank lower, and then slept for considerably over an hour.

The brakes grated for a stop, at which she roused and looked out.

"What place is this?" she asked Sergeant Dunny.

The sergeant pulled out his watch. "Four o'clock, I guess it must be Hudson."

Sarah changed to the opposite seat in the section and watched the approach to the station, but the darkness at that early hour was unfathomable and little could be seen but the lights around a depot in the lessening distance.

The whistle blew for the State highway crossing near the Fair Grounds and she could see a large touring car and a warehouse van waiting for her train to pass, their details faintly visible in the glow thrown back by the headlight rays against the moving coaches.

She instinctively observed on approaching that the van was painted white with red wheels and that the touring car had a broken headlight lens; then as her car crossed within twenty feet of them her eyes faintly photographed a group of men in the touring car, huddled down in wrappings, one of them with something whitish about his head and she plainly heard the motors turning noisily as they idled.

Then somebody, something, struck her a violent blow on the arm, her hand impulsively shot out to the right and crushed against the window glass, her frightened cry was of pain as well as shock. The sergeant who had been peering out the other side was instantly on his feet with a gun in hand, a gun earnestly seeking occupation.

The pull of Nilgrav that had drawn from the north gradually shifting to the east unnoticed by Sarah, had in the twinkling of an eye pulled from the south with a wrench that almost dislocated the arm.

"Stop the train, sergeant, he's there—back in that auto!" Sarah's voice rang out in the stuffy coach. And then the fear that a minute's delay might be fatal, seized her. "Quick! we must follow *now*, right away!"

"All right, Miss, all right," the sergeant answered. "Better we wait until the train stops at the station—we can get an auto there. If you are correct we'll get 'em. They can't get away now."

Before the train stopped the sergeant had his men and Sarah on the car platform with the vestibule door open and was appraising for commandeering purpose the most promising of the waiting public and private autos.

"I want *you!*" he bawled out to a spruce chauffeur in gray livery. The startled man was standing by a well-groomed Marmon on the outlook for his employer.

"Yes, you and your wagon. Where's the owner?"

"Here I am," the owner called twenty feet away, seeing his car surrounded by the blue cordon.

The sergeant explained tersely and with partial clarity.

"All right," the owner grumbled graciously, "take it along, damn it all."

"Indeed I thank you, sir," was Sarah's testimonial. "Please give the sergeant your card."

The sergeant had no card, he could not reciprocate, but he spoke his name and precinct.

"Corporal Kennedy," the sergeant then commanded, "you stay here, go to the police department and have the chief 'phone the Poughkeepsie department to run a squad in a machine up the State road just beyond Rhinebeck and halt the gray car with a broken headlight. Tell 'em it 's Washington orders. Make it snappy. You chauf, beat it down to Poughkeepsie. Burn it!"

Then the chase began in earnest. With muffler open the splendid machine leaped into headway and in five minutes from the time Sarah saw the Benz car at the crossing, the Marmon was in the exact spot and cleared the iron rails in a jump at sixty-five miles an hour.

"You see, Miss," Sergeant Dunny's hand megaphoned to Sarah from the front seat, "it 's forty-one miles we have to run to Poughkeepsie. Rhinebeck is sixteen miles this side. If those Poughkeepsie fellows are lively they can beat the Benz car to Rhinebeck 'cause they have nine miles less to go. At Rhinebeck they could leave the State road and strike north over the ferry to Kingston or go on good roads east and south in a half dozen different directions. Might lose 'em. But if they are held up this

side of Rhinebeck we've got 'em easy. D'y understand?"

Sarah was too breathless to explain to him that whether Ames was carried east, west, north or south the Nilgrav direction sleuth on her finger would lead her to the center of any labyrinth in which he might be hidden. The present direction was right. The forward pull proved it.

"Near Rhinecliff," the sergeant called, "something should be doin' prompt."

The "doin's" that the sergeant looked for depended upon the activities of Corporal Kennedy and upon the on-the-jobness of the Poughkeepsie police. It would have delighted Sergeant Dunny had he known that Kennedy got Poughkeepsie headquarters in four minutes, that the chief himself stepped upon the accelerator of his own waiting car, and with three of his men was breezing joyously toward Rhinebeck, filled with visions of Federal recognition, for "Secret Service, Washington, official," is a rare and precious commission to the civic servant.

Tearing through Rhinebeck without meeting any cars the Poughkeepsie chief proceeded

three miles further towards Red Hook and then stopped, swung across the highway and waited.

Waited less than a minute. A glow illumined the sky beyond the rise ahead, twin suns blazed at the summit, pitched downward and signaled with imperious honks for right of way. And in a moment more came the shrieks of dry, hot brake bands.

The blue coats were out of their car and stood their ground in the scorching light with drawn revolvers, their own car a barricade background. But the police were not too blinded to identify the broken headlight lens.

"Pull up and stop!" the chief commanded.

The Benz had slowed to a crawl and obediently drew off to the road side toward the river. It paused just a moment, then a clutch snapped and rang, there was a crash as the chief's car was jolted around in a half circle, two spiteful jets of gun flame blazed out from the front seat and a red tail light became a vanishing point in the direction of Poughkeepsie.

That contracting red dot challenged the skill of four marksmen, but it did not go out, it softly faded away according to the laws of receding objects.

The chief was eloquent with rage and dis-

appointment. The Benz had cleared and departed, while his own car was banked up on the incline with a rear wheel totally wrecked. Sending one man up the highway and another down in search of a telephone, he and his remaining man waited for a car to pass from either direction.

The delay was tormenting. By his watch twenty minutes had passed since the Benz disappeared, no car had passed and neither of his men had returned.

He felt in a pocket for his pipe, when suddenly the summit of the up-highway glared again, two brilliant path finders lit up the macadam and, in response to his frantic waving, a Marmon rammed its nose close to the chief's brass coat buttons and halted, pulsing inquiry.

The sergeant and Sarah were with the chief in a moment. "I know," he advanced without preliminaries. "Did you see 'em, Chief?"

"Hit me! Gone!" and the chief pointed to his car and down the road.

The sergeant glanced at the car with the crumpled wheel and said:

"How long ago? Get in! After 'em, Chauff." A very terse blend of interrogation, invitation and command.

"Wait, wait," Sarah cried, "let me out." The ring pulled hard toward the ground and to the right. This time she made no effort to restrain its insistent point and hurried toward some rocks and heavy weeds on the river side of the highway.

"Turn your headlights over there," the sergeant called to the Marmon chauffeur, but before this was done, Sarah's hand in the dark had sought and found, had touched the hand of a motionless figure lying on its face in the sand, and at the instant of contact a bright spark snapped between two rings and revealed the form of the man she loved—bound hand and foot, gagged and unconscious.

The search rays were now full upon them and the officer who went to her aid found the girl with Ames's head on her lap, untying the cruel kerchief, calmly and without weeping.

"No, he's living, thank God. I felt his heart beat. Cut the ropes, please, quickly."

They carried Ames to the roadside and laid him upon a robe, deathly still, but indeed living as Sarah had declared.

The blood was wiped from a gash in the forehead and efforts employed to restore consciousness. Two other cars had now arrived and

from one came a bottle of something "made in Scotland."

At the first flickering of the eyelids Sarah spoke his name in his ear and the quickening sense caught the loved tones for he smiled before the eyes opened.

"I 'm here, Paul dear, Sarah——"

"Youse two git into one of them cars there and we 'll chase 'em in the Marmon," was Sergeant Dunny's abrupt order. "We 'll eat up the road and youse follow along easier," and away they went after the Benz again.

Ames was now on his feet walking slowly to restore circulation, leaning at times upon Sarah's supporting arm and talking all that she would allow. Presently he said, "You did n't see a Gladstone bag around, did you?"

Nobody did, but everybody searched.

"Thanks. I really did not expect it. I feel fine. Let 's go."

Dawn was now breaking, but it had nothing on the chief's heart. Foiled in his supreme purpose, his car disabled,—there was no rose paint in his box of picture colors.

Sarah stepped up to the disconsolate man. "Chief, without your wonderful service we would have failed. You made it possible for

Mr. Ames to escape and I will never cease to be grateful to you."

"And let me assure you, Chief," Ames contributed, "that you shall hear from Washington about this and, as for your car—if the new one that will be sent you to-morrow does n't please you—give it away and name the kind you prefer."

Comfortably seated in a large touring car with a police officer as an aide, Ames and Sarah were the happiest creatures on this beautiful earth.

"All this has happened in less than one night," he repeated several times. "It seems incredible." And he told her that when he saw the chief's car drawn across the highway and the blue coats with drawn revolvers, he was sure the climax had arrived. He saw, as did the chauffeur, that by crowding to the right and taking a chance on a lucky bump the obstructing car could be passed. Herancourt ordered this done and rose partly in his seat to get his automatic. The man alongside Ames leaned forward for the same purpose and on the instant of the collision Ames threw himself over the side and landed on his head and

shoulder. He had escaped, but so had Herancourt with the stolen Nilgrav.

Sergeant Dunny was now a half hour back of Herancourt and a half hour ahead of Ames and he was pushing the Marmon to its last ounce.

At Fishkill and Ossining he slowed down to ask if the big gray Benz had passed and at both places was informed that it had and that it was traveling like Billy B. D.

It was getting quite light and that was a help, more advantageous to the pursuers than to the pursued.

At Tarrytown the sergeant began to fear that the Benz would reach New York and totally elude him but, if will power is propulsive, it is likely that he accelerated the speed several notches.

"Dobb's Ferry," he muttered, checking off familiar landmarks, then the next instant, "What's that? Slow up!"

A quarter of a mile ahead the Benz was plainly seen drawing up to a red gasoline tower and the officers made ready for action. Jumping from the Marmon with revolvers drawn, they surrounded the car before the driver descended. And the driver was alone!

The sergeant pounced upon him with little gentleness.

"Where 's the rest of your outfit?" he demanded.

For reply the man jerked his thumb over his shoulder and allowed a contemptuous leer to betray his exultation.

"When did they get out?"

"Oh-h. Maybe hour or so. Long time ago."

"What place?"

"I don't know. I know not this part the country."

The sergeant was disgusted and pretty well stumped.

"Take this man to Yonkers and have him held," he ordered one of his squad. "Leave the car here at the garage and report to headquarters."

He then filled the Marmon with the needed gas and water and turned again toward Poughkeepsie trying hard to formulate a good plan. At Peekskill a stop was made for a cup of coffee and a sandwich and a half mile further up this road, he met the car containing Ames and Sarah.

"He got away with the goods," he blurted to

Ames and related the overhauling at Dobbs Ferry.

"I think that what Herancourt did was to get out of his car at Poughkeepsie and make for the port where his submarine is waiting," was Ames's conjecture.

"Submarine? What submarine?" This was news to the sergeant. Ames repeated what Herancourt had told him.

"I'll go back to Poughkeepsie and get his trail," the sergeant announced, "and then send out an alarm to watch at Bridgeport, New Haven and New London. They're the three best bets."

Ames was dissuaded from accompanying the sergeant only by Sarah's firm protest. He looked and felt sick and exhausted and she was immensely relieved to put him in the hands of her father at the Biltmore and Ames's own physician two hours later.

Shortly after noon the sergeant telephoned that Herancourt had given a Cornell college student five hundred dollars to take him from Poughkeepsie to Stamford, Connecticut; and that following this lead he had gone there only to learn that a hired skiff had carried three passengers and a Gladstone bag to a merchant sub-

marine that had anchored out in the Sound the night before.

Washington was at once advised, four subchasers were detailed to assist in the search but the U-boat succeeded in gaining the open sea probably by discreet submersions.

Four days later the log of the west bound Cunarder *Mauretania* recorded passing a submarine merchantman twelve miles to the south, one hundred and thirty miles east of New York and headed east by northeast by east.

CHAPTER XIII

YIELDING to the pressure brought by Sarah, her father and Eph, Ames bestowed upon himself a recuperative period of three quiet days in his New York hotel and then went to Washington accompanied by Mrs. Worthington and Sarah.

Senator Stillwell had arranged a meeting with the President and the Secretary of State and, while it lasted scarcely an hour, it outlined plans providing Secret Service and Army officers some quick intensive work for the next two weeks and not a little labor to certain other departmental officials.

"Of course," Ames had explained, "we could deinsulate the Nilgrav mass that we have, our half, but it would ruin both halves in the actual contact and that seems unwise right now because Hunovia may be prevailed upon to force the return to us of the stolen half when it arrives in the U-boat."

"What would happen if you removed the

insulation from your half right now?" the senator inquired.

"The minor half would rush with almost meteoric speed to the dominating half," Ames replied, "but we are uncertain of their relative importance. If the half now with Herancourt in the submarine should be, as we believe, the dominating element, ours would make directly for it, crush through the craft, sink it and be buried inert—with the dead. On the other hand, if our element proves to be the controlling one, theirs would crash through the U-boat, leaving it to sink and then rush to our half, wrecking everything in its path and destroying itself and ours on its contact here."

"Rather a remarkable meeting in either event," the senator dryly remarked.

"And a somewhat expensive meeting, too," Ames observed with equal dryness, "that is, if dollar millions are any indication. Our Nil-grav directors are in a blue funk, poor dears." He did not mention how expensive the incident would prove to him.

"What does your friend Herancourt hope to do with only one half?" the senator asked Ames.

"I believe he hopes to solve the physical mystery of the new metal by analysis, using the in-

formation as a guide to finding more of it, or to produce it by some sort of synthetic process. But, unaware of its operative secrets, he does not know that he could effectually use what he has; nor does he know we could effectually use what we have. I fancy he believes that it requires both halves to be operative and if so he has the mistaken notion that neither is potent without the synchronized control of both, and there's where we shall fool him unless he behaves," was Ames's grim finish.

"Let's make a final appeal to Herancourt," he told the senator. "He believes that both elements are necessary for the operation of either and that he has the controlling half; consequently, he believes that we are powerless to do anything effective with our half. I would feel more comfortable to frankly tell him he is off in his calculations."

"Are they likely to hit upon the composition of Nilgrav?" asked the senator.

"They have great physicists over there," answered Ames, "and it is highly probable that they might. The first piece of the element that they cut from it would react in a way that would indicate the key to its secrets; and, too, to actually know what to look for in a world

search for more of it might give them an equal advantage with us."

"All right, Paul, give the fellow another chance if you think best, but don't let him ride you," the senator concluded.

"I want to give him another chance, not only to avoid a terrible punishment but because we want to save a few million dollars worth of matter," Ames honestly confessed with a laugh. "My Nilgrav company directors are under doctors' care for insomnia."

He then sat down and studied over the wording of a cable message to Herancourt and did not have it ready for almost an hour.

The message was the most important and carefully prepared of any he had ever been called upon to transmit and he realized it.

No ambiguous or formal phrasing was used. It was a cable letter from one man to another; it was long enough to tell the story without customary abbreviation yet every word breathed sincerity and the strength of truth, while at the same time it was designed to convince by the confident possession of great power.

Herancourt was enjoined to reflect upon the tremendous responsibility of his position and the action of his associates. It called upon him

to restore what was not rightfully his, frankly informed him that he was deceived in his belief that the half of Nilgrav in his possession rendered the other half impotent, advised consultation with his government and finally announced that unless a cable answer was promptly received, both elements of Nilgrav would be employed in a manner that would result in a great calamity.

It was an appeal that should have satisfied any reasonable man, any intellectuality not warped and distorted by wilful hatred and blind obstinacy.

The answer came the next day, over Herancourt's own name. "You may as well know that your proposition was submitted and rejected. Your bluff is called. Threats like chickens come home to roost."

"Wow-w!" came from Senator Stillwell.

Cable inquiries to the United States secret agents in Hunovia confirmed information about a meeting at eight o'clock on the evening of June twenty-ninth in a sea-side villa owned by one of Hunovia's most prominent scientists.

The corresponding time around New York would be two o'clock in the afternoon.

Early in the morning on that eventful day a

group of ordnance officers and privates was busily engaged in final preparations for sending an important message to Hunovia.

The message was to start from the sea-coast fortifications at Sandy Hook, New Jersey, twenty miles down the bay from New York, just at the angle where vessels bound for Europe throw the helm and start up the long diagonal course. East by northeast by east.

A great sixteen inch rifle, the newest piece of heavy ordnance from the Government works at Watervliet, squatted solidly upon its wonderfully trussed platform, tilted its disdainful nose aloft and sniffed at the clouds. Pointing high, east by northeast by east.

An officer detailed from the Aberdeen Proving Grounds reported to the C. O. at ten o'clock, lighted a cigar and strolled in the direction of the giant gun.

Returning the salute of the captain in charge, he closed one eye in a protracted wink and one nostril with his thumb. Then he asked with farcical ceremony, "What is to-day's order on this gun, Captain?"

"Testing a new time-fuse, Major," answered the captain, smiling knowingly.

Continuing the talk at closer range and in

tones that carried no further than their own ears the two officers exchanged confidences.

"I've heard interesting rumors about this little test," the major began. "Apparently the only official feature about it is the extremely official manner in which orders were issued to treat it *unofficially*."

"Same here," the captain answered. "There is to be only one firing and I've heard that the shot will carry across the sea. How does that sound to you?"

"About the same as it sounded to you. This has no sub-caliber tube, has it?"

"No. Straight sixteen inch and regular maximum powder charge."

"What's the idea?"

"Tell you what I think, Major. It's what's *in the projectile* that is supposed to do the business, a new substance called Nilgrav."

"Ah, yes," the major remembered something about it now. "Where is the projectile? I'd like to see it."

"It won't be here until that man Ames and his party arrive. I'm rigging up a queer firing key and inspecting the recoil."

At one o'clock Ames, Eph, Sarah, her father and Senator Stillwell with about twenty con-

gressmen and their friends, arrived at the gun emplacement and were followed in a few minutes afterward by an army truck, bearing a huge projectile, sixteen inches in diameter and taller than Sarah.

Its nose fuse was not yet in place and was carried separately. The delicate mechanism of the fuse had not been finished until that very morning.

Inside that long, perfectly turned projectile lay the deadliest and costliest loading ever devised in the art of war.

Snuggled closely together in its dark interior were two elements coördinated for perfect functioning, a half of the priceless Nilgrav worth a hundred million dollars and a hundred and twenty pounds of T.N.T. And though designed to cause death and destruction it was also, in the ultimate, designed to save the lives of millions and prevent the ruin of a thousand cities and towns.

Would it accomplish its mission? Ames gave no thought whatever to the money loss, but the strain of uncertainty was consuming his nerves.

Sarah was intimidated at the sight of the monstrous gun and dreaded the shock of its

deafening discharge. This dread was shared by others also.

"Why is it necessary to use that terrible weapon?" she asked her father. "Couldn't Paul start the Nilgrav off right from the ground by simply breaking the insulation, as he did with the smaller pieces before?" She wanted to ask Ames but he looked sufficiently troubled without being called upon to answer a girl's questions.

"In the first place," Dr. Worthington explained, "Paul cannot tell which of the Nilgrav elements will cross the sea to the other. He believes that this one will do the traveling, but is not sure. If he deinsulated this and he was mistaken, it would not move and the other would rush over here. The force of impact would amount to a tremendous explosion and cause destruction and, doubtless, loss of life on this side, instead of on the other side. And if the moving mass traveling close to the water struck any ships the consequences would be disastrous."

"Yes, I can understand that," Sarah replied.

"So Paul places his half of the Nilgrav in the projectile. In the nose is a double fuse, one

a time fuse that jams a brass bar down and strips off the insulation from Nilgrav when the projectile reaches its highest point in the air. At that instant the deinsulated Nilgrav takes the travel program into its control. The projectile does not begin to drop because Nilgrav's attractive force urges it toward its related element on the sea-shore in Hunovia. When it reaches and strikes it the contact fuse explodes the T.N.T. and the Nilgrav elements disintegrate. There is really a double explosion and everything within a radius of two hundred yards is annihilated."

"How horrible," and Sarah shivered.

"It's devilish ingenuity applied to a holy purpose," her father corrected, "or you may reverse the statement if it suits you better. By this means the projectile really begins its eastward flight high in the air and proceeding in a long diagonal line only reaches the level of a vessel a short distance from the European coast."

The gun crew were now placing several bags of propelling power at the breach of the great gun while Ames and the ordnance experts were screwing down and minutely adjusting the complex nose fuse.

A breathless silence fell on the group as the loading mechanism pushed the big projectile into the gun breech, the powder following, and the staggered breech piece was swung in and locked.

An expert from the artillery division of the Ordnance Department approached Ames and Senator Stillwell. "It may interest you to know, gentlemen, what formula we adopted in figuring our range calculations to meet the requirements of this test."

"It would indeed," the senator replied.

"That gun," the officer continued, "carries a projectile weighing twenty-three hundred and forty pounds, using a powder charge of eight hundred and fifty pounds. The projectile leaves the muzzle at a velocity of twenty-seven hundred and forty feet per second. The greatest horizontal range is attained at an angle of approximately forty-five degrees. That range is about forty-nine thousand yards with a total time of flight of a hundred and three seconds. The maximum altitude is about fifteen thousand yards and the projectile reaches that height in forty-six seconds.

"Now, the greatest possible altitude would be attained by pointing the gun straight up in

the air, when the projectile would mount close to thirty thousand yards—or you might say, three times as high as Mt. Everest—and it would reach that height in about one minute. Thirty thousand yards is a little over seventeen miles up in the air.

“We have never fired such a gun straight up in the air, but to-day we are training it just a trifle off dead upward—so that it won’t fall back on us, but the projectile will rise about sixteen and a quarter miles at least.”

“If it *did* fall, it would sink into the sea?” the senator asked.

“Surely,” the officer assured him, “with the wind where it is, it would fall two miles out.”

The captain of the crew here verified the angle of elevation and prepared the electric firing wire.

Ames looked at his watch. The time was 1:35 P.M. “We are early,” he remarked to the captain. “All we are now waiting for is a cable.”

The cable from the secret service men was to announce at the last minute that the meeting of Herancourt with Hunovia’s great scientists was actually in session.

At five minutes after two the message

reached Ames that twenty-six men, including Herancourt, had entered the villa and that proceedings had apparently begun, but that it would perhaps be better to wait fifteen minutes before "operating."

Ames smiled in his nervousness. "The fellow who sent that message has faith in our ability to 'operate.' He needs that fifteen minutes to put distance between him and that villa!"

"We may as well connect our wires, Captain," Ames called through unsteady lips.

A hundred feet from the ponderous gun was the firing platform, but the usual electric key was not in evidence. There was, however, a large brass clock on a wooden base, a small mahogany box and several brass binding-posts. Ames connected one wire, the captain another, and two other men, one each.

The last detail of all the elaborate preparations had been concluded. When the long hand on the clock face touched the figure three—fifteen minutes after two—the gun would roar in discharge. There remained now eighteen minutes of nerve racking waiting.

Ames had himself devised this firing arrangement because he would not individually

set in motion the death-dealing function, even by touching the firing key, nor would he shift the task to anybody else.

"It would be quite like turning the current into the condemned man in the electric chair," he had said. What strange distinctions are made at times by the mortal mind!

Suppressed excitement held the group of watchers and what little talking was done was in whispers.

Ames now stood close to Sarah and her father.

"There is something about this that reminds me of my father's account of the blowing up of the rocks in Hell Gate channel in the East River off New York. General Newton, who was the engineer, was a friend of father's. It took eight or ten years to drill the rocks under the water, nitro glycerin was used and each charge connected up by wire. One afternoon when all was ready father was invited to be present. A telegraph key was on a table and at the right moment it was pressed by the hand of the general's little daughter. That opened up the channel for all the boats that now pass through. To-day a little brass clock will do the work."

Ames then began to figure at what point the elements would meet if it were true that the half now in the throat of the gun was the dominating one; and he verified his first calculation that it would occur about five hundred miles east of Sandy Hook and at the bottom of the sea. There would be two explosions: the first after the nose of the projectile hit the water, or about one hundred feet below the surface; the second when the Nilgrav elements came in contact at the bottom. And he pictured the path of that element now in Hunovia, if indeed it was controlled by the one slumbering in the gun. It would describe a constantly changing curve upward as the gun-propelled element rose to its highest point and then a varying curve downward under the descending parabola of that falling element and for over two thousand miles burrow its way through sea water.

A rather complex problem for ballistic experts, he concluded.

At fourteen minutes past two the men of the gun-crew inserted fingers in their ears, tilted forward on their toes with mouths open and signaled to the visitors to do the same.

The strain of that last minute of waiting was exhausting. Eyes went from clock to gun and

from gun to clock. It seemed that the black metal hand touched the point at three without effect.

The guests began to teeter unsteadily; the tension was unbearable. The captain moved to inspect the wiring——

Then a crashing, deafening roar, a blaze that lit up a yellow vapor, a blast of wind pushing violently backward, the great steel monster swinging on the recoil and for minutes, so it seemed, a long despairing scream sinking deeper and lower in tremulous waves as the monster shell was hurled heavenward.

Ames fancied he caught a winking glimpse of the dark object as it cleared the vapor, but his eyes, a bit moist, were lacking in focus.

Two hands grasped his arms, one the left and one the right. They belonged to Sarah and Eph and they pressed him lovingly.

Ames pivoted them around facing the sea. Turning to Sarah he said quite cheerily, "Riches take wings, girl," and to Eph, "We've lost our jobs, old scout." To prove to them he knew what they would answer he at once followed with "Now for town and a week's holiday. Then for new riches and new jobs. Come along, Doctor, come, Senator."

Shortly before five o'clock that same afternoon, at the very minute when Sarah accepted a plain gold ring and said "I do," the news ticker clicked off a cable message from the Reuter Agency, briefly announcing that a frightful explosion had wrecked the country home of Hunovia's greatest scientist and that a large group of other prominent scientists, together with Eric Herancourt, had been blown to atoms during the investigation of a new element called Nilgrav.

Just what happened to the giant projectile and exactly what transpired in the villa cannot be told in detail as there were no survivors, but it is not difficult to approximate the events of that momentous hour.

That messenger was Nilgrav, sired by the Earl of Hell, and the mightiest of all force containers. Three inches of tough steel separated its cell from its companion, otherwise there would have been a quarrel, for though not oversensitive T.N.T. grows violent when pounded and pressed hard.

The urge for immediate speed was transferred to the passive projectile and in another instant it was under way, hurtling down the

long slope of the world for Hunovia at three hundred miles a minute.

It was obedient to the control of the dominating element. Ames was right.

On the edge of a forest and close to the tide-marks on the sands stood the pretentious home of the famous physicist. It was a peaceful spot. A hushed and timid breeze stole by on tip-toe to the sea and from the guardian chestnut trees rose the sleepy peeps of sated nestlings.

Within the villa a group of thirty men was gathered around a large table bearing liquor and cigars. A mass of imponderable substance floated motionless in the smoky air and the man Herancourt, on his feet, was pointing to the strange phenomenon and, boastfully perhaps, narrating its attributes and the story of its abduction. A program was about to be adopted. Each of the great scientists and ordnance experts was to have a morsel for analysis and experiments.

The marble clock on the mantel warned Herancourt that others were there to speak also. It struck the quarter after.

Herancourt might have pushed the mass of Nilgrav around with the butt of his cigar, tap-

ping it from one man to the other, inviting them to touch and examine it superficially.

"It is the dominating half of the mass found by the American, Ames," he probably told them. "It is for us to learn where to find and how to control it, or perhaps compound it chemically."

But before the discussion became general, the wall to the west crashed violently inward; a hot, dull red, shattering mass of metal struck the suspended element with a blinding flare and a double detonation that seemed to rend the universe.

Where the villa had stood was a great crater, sparsely strewn with twisted rods, bits of wood, plaster and stone, while overhead dense billows of gray smoke slowly floated toward the sea.

Of the men remained nothing. Of Nilgrav not a solid trace.

The metal of marvels had been sublimated to metallic vapors that mingled with the rack borne seaward—drifted, drifted poised and gently falling—then floated on the wave crests of Old Ocean, whose wooing arms made it yokemate to menial matter, submissive to the mundane god of gravity.

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